CDP-C77ES/C87ES/C715

SERVICE MANUAL

US Model
CDP-C77ES/C87ES/C715
Canadian Model
CDP-C77ES/C715
AEP Model
E Model
Australian Model
CDP-C77ES

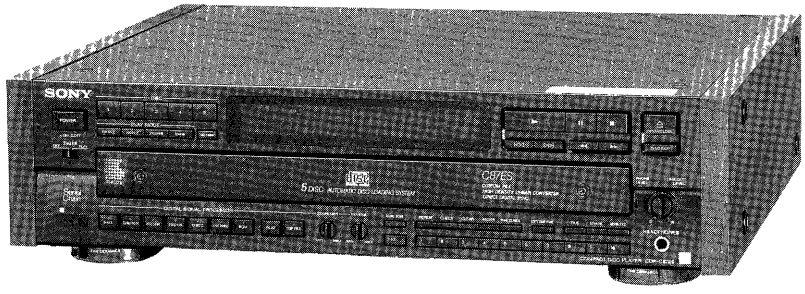

PHOTO : CDP-C87ES

SPECIFICATIONS

Compact Disc Player

Frequency response	2 Hz – 20 kHz (±0.3 dB)
Signal to noise ratio	More than 110 dB
Dynamic range	More than 100 dB
Harmonic distortion	Less than 0.0025% (CDP-C87ES/C77ES)
Channel separation	More than 105 dB

Outputs

LINE OUT (FIXED) (phono jacks)	Output level 2 V (at 50 kiloohms, non DSP mode) Load impedance over 10 kiloohms
LINE OUT (VARIABLE) (phono jacks)	Output level max 2 V (at 50 kiloohms, non DSP mode) Load impedance over 10 kiloohms
DIGITAL OUTPUT (OPTICAL) (optical output connector)	Wave length 660 nm Output level −18 dBm
HEADPHONES (stereo phone jack)	Output level max. 15 mW Load impedance 32 ohms

General (CDP-C77ES/C87ES)

Power requirements	USA model: AC 120 V, 60 Hz Australia model: 240 V AC, 50/60 Hz
Power consumption	18 W
Dimensions (w/h/d)	Approx. 470 × 125 × 385 mm ($18^5/_8$ × 5 × $15^1/_4$ inches) (CDP-C87ES/C77ES) Including projecting parts and controls
Weight	Approx. 9.4 kg (20 lbs 12 oz), net (CDP-C87ES) Approx. 8 kg (17 lbs 11 oz), net (CDP-C77ES)

General (CDP-C715)

Power requirements	USA and Canada models: AC 120 V, 60 Hz
Power consumption	18 W
Dimensions (w/h/d)	Approx. 430 × 125 × 385 mm (17 × 5 × $15^1/_4$ inches) Including projecting parts and controls
Weight	Approx. 6.3 kg (13 lbs 15 oz), net

Remote Commander RM-D715 (CDP-C77ES supplied)
RM-D815 (CDP-C87ES supplied)

Remote control system	Infrared control
Power requirements	3 V DC with two size AA batteries (IEC designation R6)
Dimensions	62 × 20 × 175 mm (w/h/d) ($2^1/_2$ × $^{13}/_{16}$ × 7 inches)
Weight	130 g (4.6 oz) including batteries

Supplied Accessories

Connecting cord
(2 phono plugs ↔ 2 phono plugs) (1)
Serial chain cable (1) (CDP-C87ES only)
CONTROL S cable (1) (CDP-C87ES only)
Remote commander (1)
Size AA batteries (2)
Screws (4)

Optional Accessory

Audio optical connecting cord POC-15

Design and specifications subject to change without notice.

COMPACT DISC PLAYER

SONY®

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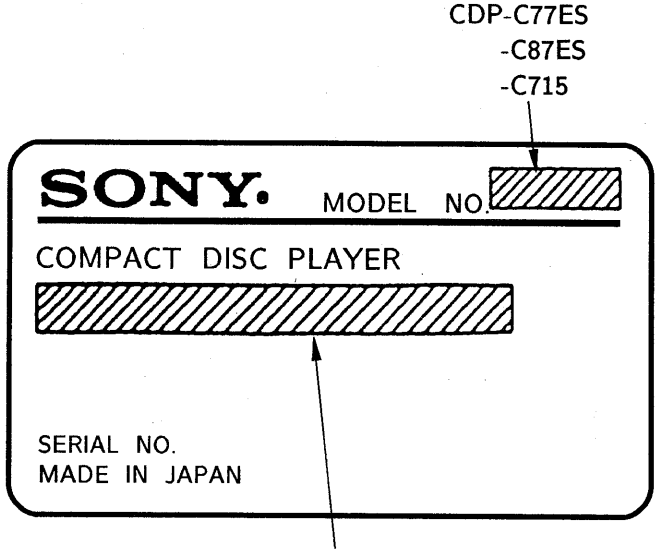
SECTION 1
SERVICE NOTE

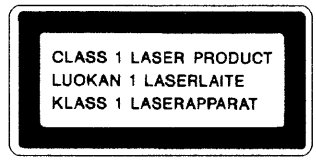
MODEL IDENTICATION



US/Canadian Model : AC 120V 60Hz 18W
E Model : AC 110 - 120V, 220 - 240V ~ 50/60Hz 18W
Australian Model : AC 240V ~ 50/60Hz
AEP Model : AC 220 - 230V ~ 50/60Hz

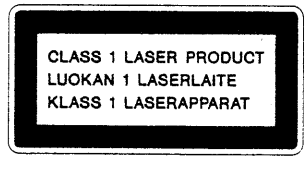
1. Laser Diode Properties
   - Material : GaAlAs
   - Wavelength : 780nm
   - Emission Duration : continuous

For the United KIngdom and European countries.



This compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

For the customers in Australia



This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe more than 30cm away from the objective lens.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer :
Check the antenna terminals, metal trim, "metallized" knobs, screw, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.).
Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable.
(See Fig. A)

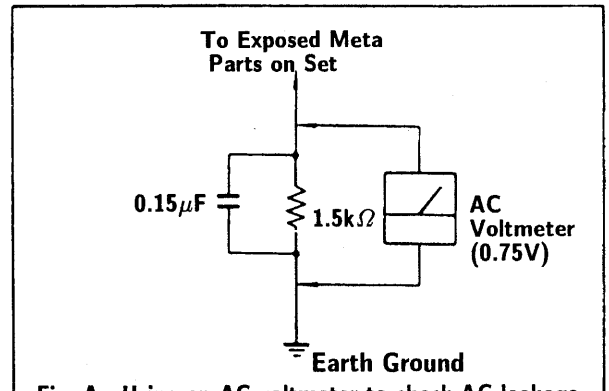


Fig. A. Using an AC voltmeter to check AC leakage.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

1. Laser Diode Properties
   - Material: GaAlAs
   - Wavelength: 780 nm
   - Emission Duration: continuous
   - Laser Output: max. 44.6 μW*

     * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optiocal Pick-up Block (including APC borad).

BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

I dette apparat anvendes laserlys. Derfor skal nedenstående instruktioner nøje følges under service.

Følg iøvrigt instruktionerne i servicemanualen.

ADVARSEL!!

Under service må øjnene ikke komme nær objektiv-linsen på den optiske pick-up enhed. I tilfælde af at det er nødvendigt at kontrollere udsendelsen af laserlys, skal det ske i en afstand af mere end 25 cm fra den optiske pick-up.

1. Laser-didoe data
   - Materiale: GaAlAs
   - Bølgelængde: 780 nm
   - Udstråling: Kontinuerlig
   - Laseroutput: Max. 0,4 mW*

     * Målt i 1,6 mm afstand fra overfladen af objektivlinsen på den optiske pick-up enhed.

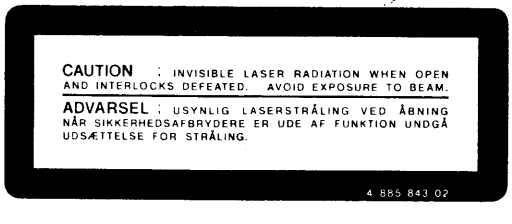
   - Klassifikation: Klasse IIIb.

2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laserdioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

LASER ADVARSEL MÆRKNING

Følgende mærkning findes indvendig i apparatet:

1. Advarsel Mærkning


CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING.
4 885 843 02

VAROITUS: Laite sisältää, laserdiodin, joka lähettää (näkymätöntä) silmille vaarallista lasersateilyä.

TEST Mode

1. CD System Controller (IC401) Test Modes

(1) ADJUST Mode

- This mode becomes active if pin 77 (ADJ) of IC 401 goes "L" following power on. Operation is affected as follows.

① GFS is not detected during PLAY, PAUSE, ACCESS, PEAK, SEARCH, and MANUAL SEARCH. Playing will continue even if GFS goes "L" (NG).

② Play-monitor function is disabled. (This function returns play to original position if the sounds are skipped for more than 2 seconds.)

③ The high-speed transfer normally used for SEARCH does not operate. (Instead, access is by 100-track jumps.)

(2) CLV-S Mode

- This mode becomes active if pin 80 (AFADJ) of IC401 goes "L" following power on. Operation is affected as follows.

① Regardless of the value of IC401 pin 79 (ADJ), which generally operates the CLV-S fixing function, the CLV mode will be set to CLV-S for PLAY during the time pin 13 remains "L" following spindle kick operation.

(3) AFADJ Mode

- This mode becomes active if pin 80 (AFADJ) of IC401 goes "L" prior to power on. Operation is affected as follows.

① Following power on, the system executes a bridge check of the S-RAM (IC402) used for custom files. (If check returns NG, abort the remaining steps described below.)

② Mode becomes CLV-A, with MUTE OFF

③ Setting AFADJ to "H" causes LD OFF, FOCUS OFF, and TRACKING OFF ; volume goes down by −12dB (same volume as for FF).

④ Setting AFADJ to "L" causes LD ON, FOCUS ON, TRACKING ON, and MUTE OFF.

⑤ Repetitively execute steps ③ and ④ to carry out emphasis check.

(4) Error-rate check mode

- This mode becomes active if pin 77 (ADJ) of IC 401 goes "L" prior to power on. Operation is affected as follows.

① The system forcibly accesses the fifth tune assuming that disc has been chucked.

Notes :

- Perform this operation under LOADING IN, and BU UP status.
- Use the YEDS-18 disc.
- Even if the panel board is connected, remote control and display do not operate since mechanical control is executed independently.

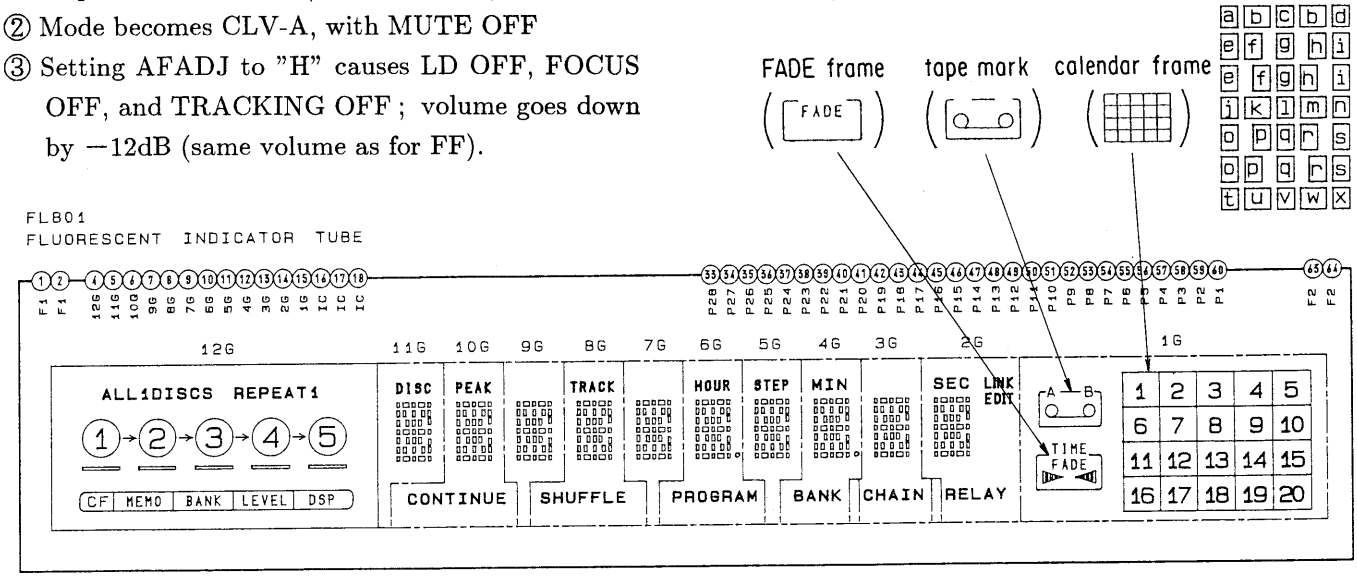
(5) Service mode

- This mode becomes active if pin 79 (TEST) of IC 401 goes "L" prior to power on. Operation is affected as follows.

① The system operates according to instructions from the master microcontroller (IC801) assuming that disc address has been detected.

Notes :

- Perform this operation under LOADING IN,and BU UP status.
- Do not execute OPEN/CLOSE, and DISC SKIP.



2. Test Mode for Display Micom (IC801)

(1) Set pin ⑱ (TEST) of IC801 to "L".

(2) Short IC801 pins ⑩, ⑫, ⑭, ⑯. (Alternatively, short CN801 pins ⑮, ⑬, ⑪, ⑨.) Short IC801 pins ⑪, ⑬, ⑮, ⑲. (Alternatively, short CN801 pins ⑭, ⑫, ⑩, ⑧.)

(3) Turn the power switch ON.

① Pressing the STOP button (□) causes all lights of the FL tube to come on. (The PLAY button (▷) and PAUSE button (▯▯) LED also light)

② Pressing the PLAY button lights the following on the FL tube : 1G(12), 4G(i), 5G(h), 6G(h), 7G (f), 8G(e) 11G(b), 12G (1). (The PLAY button (▷) LED also lights.)

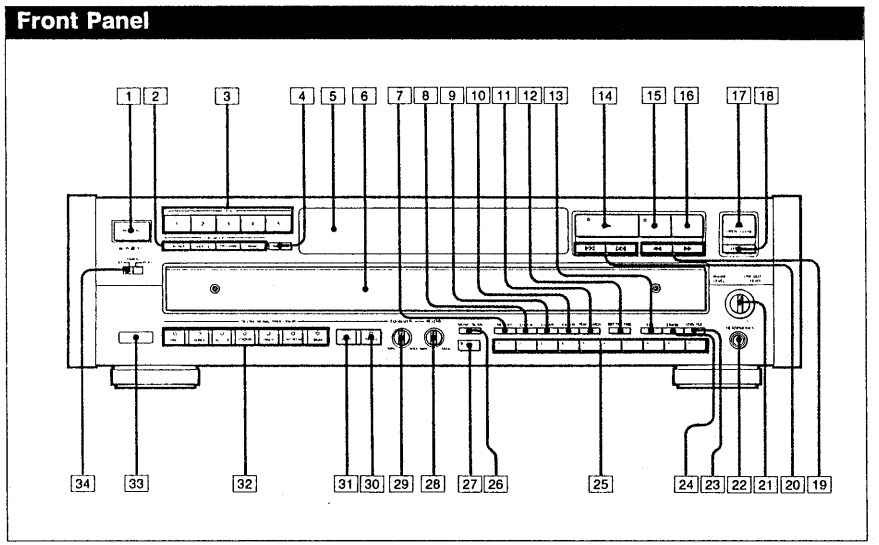
③ Pressing the PAUSE button (▯▯) lights the following on the FL tube: 1G (13, 15, 17, 19, calendar frame, tape mark, FADE, ▮▸, TIME FADE frame), 2G(k), 3G(j), 9G(d), 10G(c).

④ Sequentially press the following buttons: ⏏, DISC SKIP, ▷, ▯▯, □, ⏮, ⏭, ◁◁, ▷▷. Operation is correct if final display in PEAK-digit segment (10G) is "9".

⑤ Press the PLAY button (▷) of remote controller; this should cause the PLAY button (▷) on the set-unit side to light.

2-1. LOCATION OF CONTROLS

Front Panel

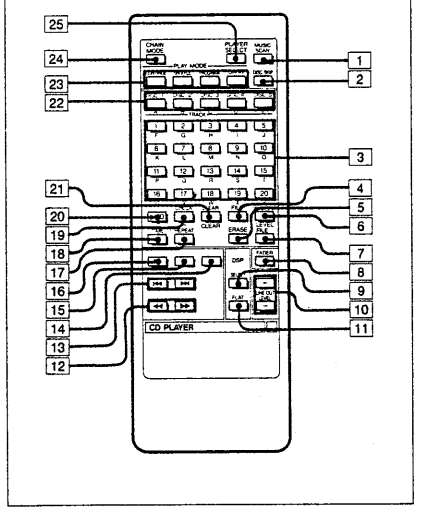


Refer to the pages indicated in ● for details.

1 POWER switch ❽
2 PLAY MODE buttons
CONTINUE button ❽
SHUFFLE button ⓫
PROGRAM button ⓬
BANK button ㉓
3 DISC 1-5 buttons ❽
4 TIME/MEMO button ❾
5 Display window ❾
6 Disc tray ❽
7 REPEAT button ⓰
8 CHECK button ⓲
9 CLEAR button ⓭
10 FADER button ⓯
11 PEAK SEARCH button ⓱
12 EDIT/TIME FADE button ⓳
13 FILE button ㉗
14 ▶(play) button ❽
15 ❚❚ (pause) button ❽
16 ■ (stop) button ❽
17 ⏏ OPEN/CLOSE button ❽
18 DISC SKIP button ❺
19 ◀◀ ▶▶ (manual search) buttons ⓾
20 ⏮ ⏭ (AMS*) buttons ⓾
21 PHONE LEVEL/LINE OUT LEVEL control ❺
22 HEADPHONES jack ❽
23 LEVEL FILE button ㉖
24 ERASE button ㉗
25 Track buttons ⓾
26 MUSIC SCAN button ⓲
27 >10 (over 10) button ⓾
28 DSP REVERB level control ⓴
29 DSP EQUALIZER level control ⓴
30 DSP FILE button ㉑
31 FLAT button
32 DSP mode buttons
BGM button ㉑
LIVE ROOM button ㉑
DISCO button ㉑
STADIUM button ㉑
JAZZ CLUB button ㉑
CHURCH button ㉑
HALL button ㉑
33 Remote sensor
34 TIMER switch ㉗

* AMS is the abbreviation Automatic Music Sensor.

Remote Commander



Refer to the pages indicated in ● for details.

1 MUSIC SCAN button ⓲
2 DISC SKIP button ❺
3 Track buttons ⓾
4 FILE button ㉗
5 ERASE button ㉗
6 MEMO INPUT button ㉔
7 LEVEL FILE button ㉖
8 FADER button ⓯
9 DSP SELECT button ㉘
10 LINE OUT LEVEL buttons ❺
11 DSP FLAT button ㉑
12 ◀◀ ▶▶ (manual search) buttons ⓾
13 ⏮ ⏭ (AMS) buttons ⓾
14 ■ (stop) button ❽
15 ❚❚ (pause) button ❽
16 ▶ (play) button ❽
17 REPEAT button ⓰
18 TIME button ❾
19 CHECK (program check) button ⓲
20 >20 (over 20) button ⓾
21 CLEAR (program clear) button ⓭
22 DISC 1-5 buttons ⓬
23 PLAY MODE buttons
CONTINUE button ⓫
SHUFFLE button ⓫
PROGRAM button ⓬
BANK button ㉓
24 CHAIN MODE button (CDP-C87ES only) ㉙
25 PLAYER SELECT button (CDP-C87ES only) ㉙

Buttons with yellow letters (A, B, C, ...) are for writing a disc memo (page 24).

This section is extracted from instruction manual.

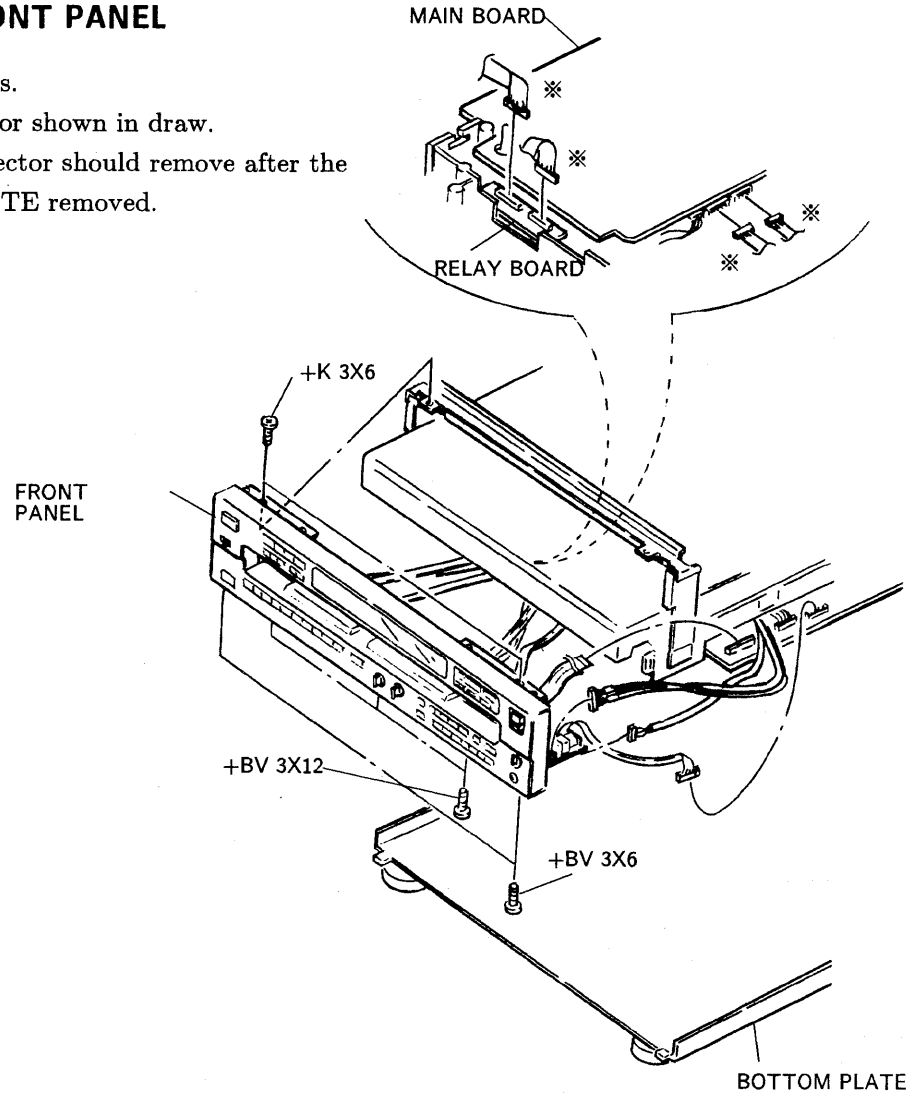
SECTION 3
DISASSEMBLY

Note :
Follow the disassembly procedure in the nomerical order given.

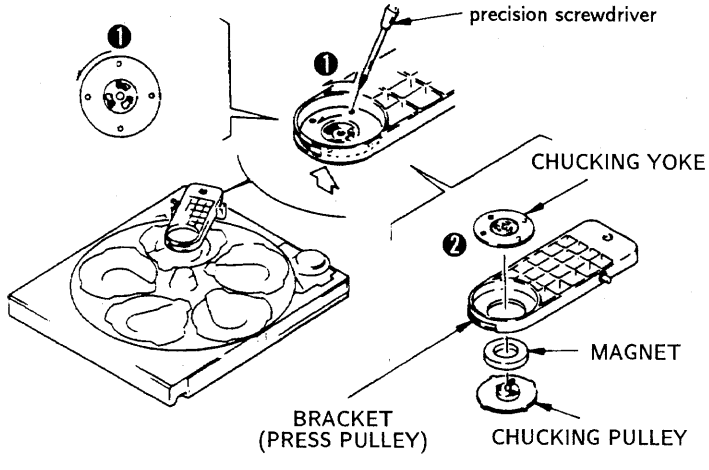
1. Remove the FRONT PANEL

1. Remove seven screws.
2. Remove the connector shown in draw.

Note : ※ marked connector should remove after the BOTTOM PLATE removed.

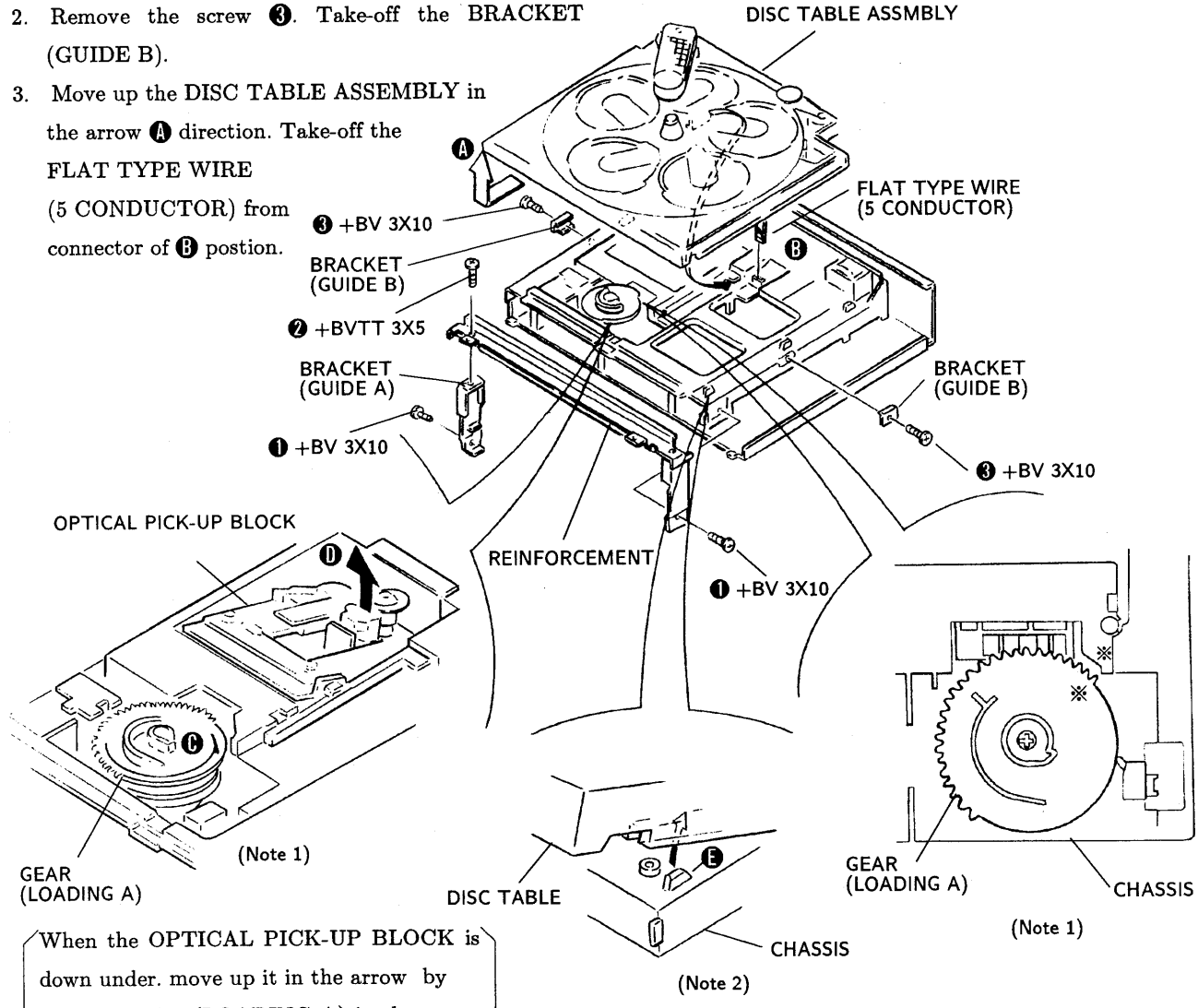


2. Remvoe the CHUCKING PULLEY



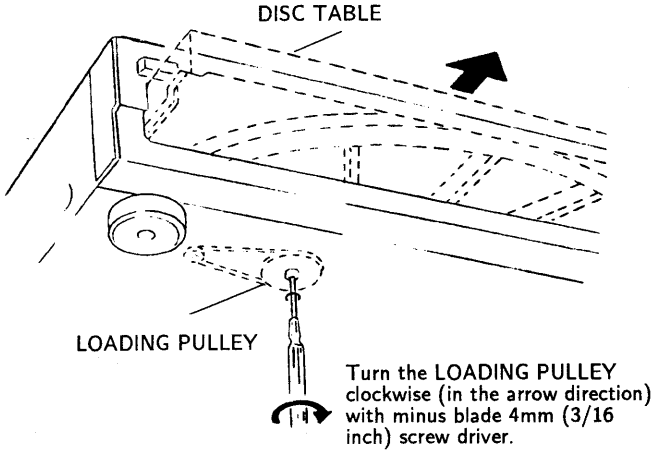
3. Remove the DISC TABLE ASSEMBLY

1. Remove the screw ❶, ❷. Take-off the BRACKET (GUIDE A) and the reinforcement.
2. Remove the screw ❸. Take-off the BRACKET (GUIDE B).
3. Move up the DISC TABLE ASSEMBLY in the arrow Ⓐ direction. Take-off the FLAT TYPE WIRE (5 CONDUCTOR) from connector of Ⓑ postion.



When the OPTICAL PICK-UP BLOCK is down under. move up it in the arrow by rotaing GEAR (LOADING A) in the arrow direction with hands.

【How to move the DISC TABLE ASSEMBLY with manual】


DISC TABLE
LOADING PULLEY
Turn the LOADING PULLEY clockwise (in the arrow direction) with minus blade 4mm (3/16 inch) screw driver.

【NOTICE FOR ASSEMBLY OF DISC TABLE】

Note 1. ※ Marked of GEAR (LOADING A) should set with ※ marked of CHASSIS.

Note 2. place DISC TABLE S0 that 5 rids on the CHASSIS to enter the guide grooves on the botton of the DISC TABLE.

SECTION 4
ADJUSTMENTS

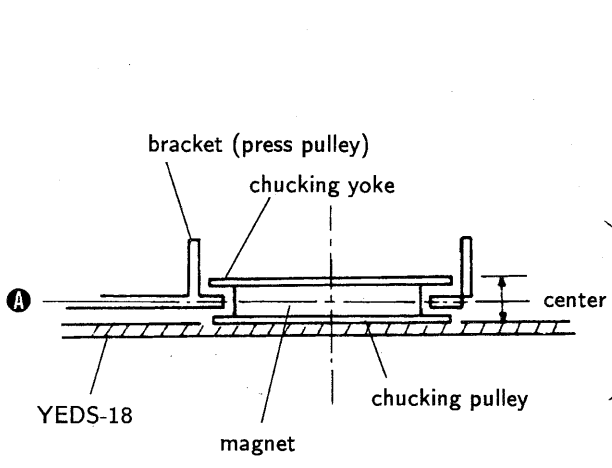
4-1. MECHANICAL ADJUSTMENT

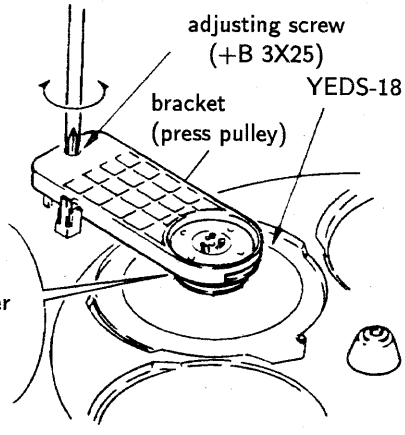
Chucking Arm Height Adjustment

This adjustment should be parformed after the electrical adjustment and on replacing adjusting screw, magnet, on chucking pulley.

Procedure :

1. Set disc (YEDS-18)
2. Adjust the bracket (press pulley) hight with adjusting screw, perform same height between the center part Ⓐ of the bracket (press pulley) and the center part of the magnet as shown in the below drawing.
3. After the adjustments, apply suitable locking compound to the parts adjusted.





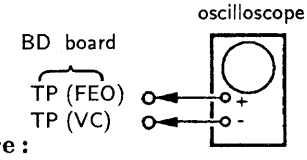
4-2. ELECTRICAL BLOCK CHECKING

Note :

1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

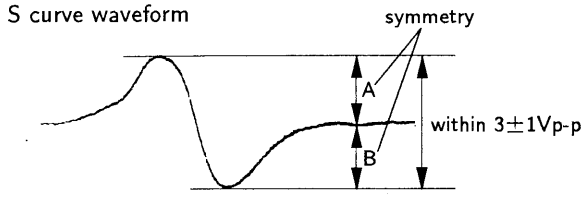
S Curve Check

- This checks that optical-system adjustment is correct in spite of vibration and impact. If adjustment is off the system becomes more sensitive to disc variation of distance between its surface and the sensor ; focusing becomes more difficult.



Procedure :

1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within 3±1Vp-p.



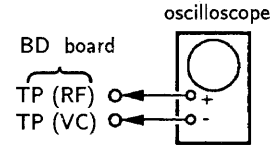
5. After check, remove the lead wire connected in step 2.

Note : • Try to mesure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.

• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

- Dirt in the optical system causes the level to decline.
- If APC circuit is faulty, the RF level will behave strangely.
  (If RF level is off, focus becomes difficult and playback of scratched discs deteriorates.)
- To check for clear RF-signal waveform, check whether optical system moves in response to shock. (A unclear RF-signal waveform can cause increases in block error rate and noise.)

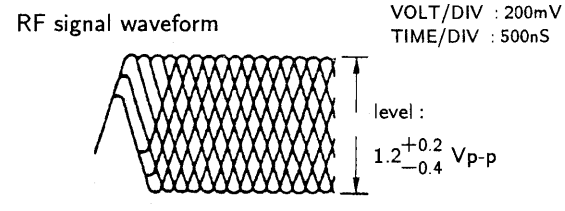


Procedure :

1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

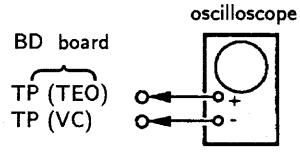
Note :

Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the wave- form.



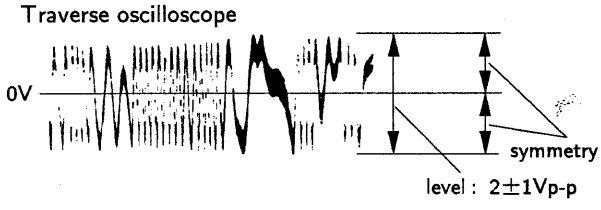
E-F Balance Check

- Impact can distort balance; because tracking-error signal is generated from E-F, bad balance can cause PLAY operation to continue while the system perpetually off track, or may cause handling of eccentric or scratched discs to worsen.



Procedure:

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.



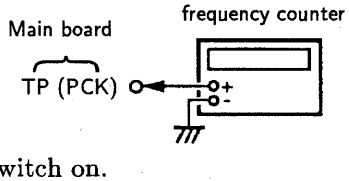
6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

- Because digital PLL is being used, frequency is not adjustable. Check the frequency reading; if PCK frequency is 4.3218 MHz, the disc should be rotating at the correct rate.

Procedure:

1. Connect frequency counter to test point (PCK) with lead wire.



2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4. 3218MHz.

Focus/Tracking Gain

- Gain High → Enhances the capabilities of handling eccentric disc and disc of which distance between its surface and the sensor varies.
  Gain Low → Enhances handling of disc scratches.

This gain has a margin, so even if it is slightly off. There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

• IC801DIAPLAY MICON (MSC62408-026GS-V1K)

Pin No.	Signal Name	I /O	Function
1	(NO USED)		
2	TIMER	I	TIMER SW input terminal
3	KEY0	I	KEY SCAN input
4	KEY1	I	
5	KEY2	I	
6	KEY3	I	
7	KEY4	I	
8	KEY5	I	
9	KEY6	I	
10	CMD0	I/O	Mechanical-controller communication I/O terminals (data)
11	CMD1	I/O	
12	CMD2	I/O	
13	CDM3	I/O	
14	M. REQ	O	Mechanical-controller communication I/O terminals (control)
15	S. ACK	I	
16	M/F	I/O	
17	RMIN	I	Remote-controller interrupt terminal
18	TEST	I	Test-routine terminal
19	Q. INT	I	Mechanical-controller interrupt terminal
20	RESET	I	Reset input terminal
21	TEST		Chip test terminal
22	X. ACT	O	Relay output terminal
23	M/S	I	PLAYER MODE (1/2) input
24	C. REQ	O	Serial-chain communication terminal
25	C. ACK	I	
26	C. DATA	I/O	
27	DSP	O	DSP microcontroller I/O terminal
28	PAUSE	O	PAUSE LED
29	PLAY	O	PLAY LED
30	OSC1	O	Oscillator terminal
31	OSC0	I	
32	VSS	I	Power terminal (0V)
33	12G	O	TIMING OUTPUT terminal
34	11G	O	
35	10G	O	
36	9G	O	
37	8G	O	
38	7G	O	
39	6G	O	
40	5G	O	

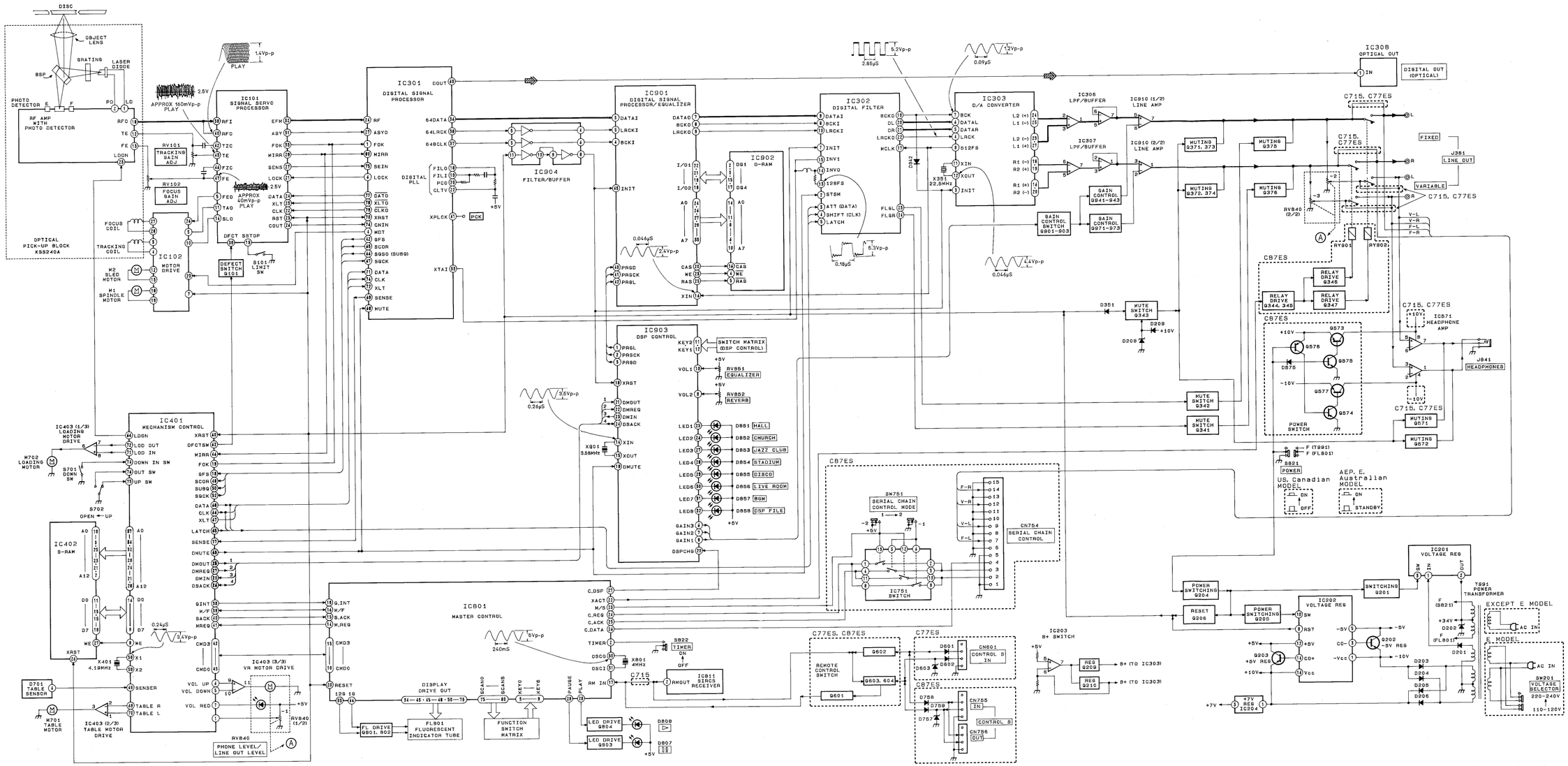
Pin No.	Signal Name	I /O	Function
41	4G	O	TIMING OUTPUT terminal
42	3G	O	
43	2G	O	
44	1G	O	
45	S28	O	SEGMENT OUTPUT terminal
46	S27	O	
47	S26	O	
48	S25	O	
49	VFLT	I	FLT PLUS terminal
50	S24	O	SEGMENT OUTPUT terminal
51	S23	O	
52	S22	O	
53	S21	O	
54	S20	O	
55	S19	O	
56	S18	O	
57	S17	O	
58	S16	O	
59	S15	O	
60	S14	O	
61	S13	O	
62	S12	O	
63	S11	O	
64	S10	O	
65	S9	O	
66	S8	O	
67	S7	O	
68	S6	O	
69	S5	O	
70	S4	O	
71	S3	O	
72	S2	O	
73	S1	O	
74	VDD	I	POWER terminsl (5V)
75	SCAN0	O	KEY SCAN OUTPUT terminal
76	SCAN1	O	
77	SCAN2	O	
78	SCAN3	O	
79	SCAN4	O	
80	SCAN5	O	

【INSIDE CONNECTION】

	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	1	a	a	a	a	a	a	a	a	a	a	1
P2	2	b	b	b	b	b	b	b	b	b	b	2
P3	3	c	c	c	c	c	c	c	c	c	c	3
P4	4	d	d	d	d	d	d	d	d	d	d	4
P5	5	e	e	e	e	e	e	e	e	e	e	5
P6		f	f	f	f	f	f	f	f	f	f	6
P7		g	g	g	g	g	g	g	g	g	g	7
P8		h	h	h	h	h	h	h	h	h	h	8
P9	(1)	i	i	i	i	i	i	i	i	i	i	9
P10	(2)	j	j	j	j	j	j	j	j	j	j	10
P11	(3)	k	k	k	k	k	k	k	k	k	k	11
P12	(4)	l	l	l	l	l	l	l	l	l	l	12
P13	(5)	m	m	m	m	m	m	m	m	m	m	13
P14	REPEAT	n	n	n	n	n	n	n	n	n	n	14
P15	ALL, S	o	o	o	o	o	o	o	o	o	o	15
P16	DISC	p	p	p	p	p	p	p	p	p	p	16
P17	(1) ▭	q	q	q	q	q	q	q	q	q	q	17
P18	(2) ▭	r	r	r	r	r	r	r	r	r	r	18
P19	(3) ▭	s	s	s	s	s	s	s	s	s	s	19
P20	(4) ▭	t	t	t	t	t	t	t	t	t	t	20
P21	(5) ▭	u	u	u	u	u	u	u	u	u	u	▦
P22	CF ▭▭▭	v	v	v	v	v	v	v	v	v	v	TIME
P23	MEMO	w	w	w	w	w	w	w	w	w	w	FADE ▭
P24	BANK	x	x	x	x	x	x	x	x	x	x	◀II
P25	(REPEAT) 1	DISK	PEAK	—	TRACK	—	HOUR	STEP	MIN	—	SEC	⊡
P26	LEVEL	—	—	—	—	—	○	—	○	—	LINK	B
P27	DSP	—	CONTI NUE	—	SHUF FLE	—	PROG RAM	—	BANK	CHAIN	RELAY	II▶
P28	(ALL) 1	—	—	—	—	—	—	—	—	—	EDIT	A

SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM


DISC
OBJECT LENS
GRATING
LASER DIODE
BSP
PHOTO DETECTOR
RF AMP WITH PHOTO DETECTOR
OPTICAL PICK-UP BLOCK KSS240A
IC101 SIGNAL SERVO PROCESSOR
IC301 DIGITAL SIGNAL PROCESSOR
IC901 DIGITAL SIGNAL PROCESSOR/EQUALIZER
IC902 D-RAM
IC904 FILTER/BUFFER
IC302 DIGITAL FILTER
IC303 D/A CONVERTER
IC306 LPF/BUFFER
IC307 LPF/BUFFER
IC910 (1/2) LINE AMP
IC910 (2/2) LINE AMP
IC308 OPTICAL OUT
DIGITAL OUT (OPTICAL)
IC102 MOTOR DRIVE
IC401 MECHANISM CONTROL
IC402 S-RAM
IC403 (1/3) LOADING MOTOR DRIVE
IC403 (2/3) TABLE MOTOR DRIVE
IC403 (3/3) VR MOTOR DRIVE
IC801 MASTER CONTROL
IC903 DSP CONTROL
IC811 SIRCS RECEIVER
IC571 HEADPHONE AMP
IC201 VOLTAGE REG
IC202 VOLTAGE REG
IC204 VOLTAGE REG
IC203 B+ SWITCH
SW751 SERIAL CHAIN CONTROL MODE
IC751 SWITCH
CN754 SERIAL CHAIN CONTROL
REMOTE CONTROL SWITCH
CN601 CONTROL S IN
CN755 IN
CN756 OUT
CONTROL S
DISPLAY DRIVE OUT
FL DRIVE Q801, 802
FL801 FLUORESCENT INDICATOR TUBE
FUNCTION SWITCH MATRIX
LED DRIVE Q804
LED DRIVE Q803
PHONE LEVEL/ LINE OUT LEVEL
RV840 (1/2)
RV840 (2/2)
MUTING Q371, 373
MUTING Q372, 374
MUTING Q375
MUTING Q376
MUTING Q671
MUTING Q672
MUTE SWITCH Q343
MUTE SWITCH Q342
MUTE SWITCH Q341
GAIN CONTROL SWITCH Q901-903
GAIN CONTROL Q941-943
GAIN CONTROL Q971-973
RELAY DRIVE Q344, 345
RELAY DRIVE Q346
RELAY DRIVE Q347
POWER SWITCHING Q204
POWER SWITCHING Q205
RESET Q206
SWITCHING Q201
REG Q209
REG Q210
TB91 POWER TRANSFORMER
J841 HEADPHONES
J381 LINE OUT
FIXED
VARIABLE
DIGITAL OUT (OPTICAL)
C7ES
C715, C77ES
US, Canadian MODEL
AEP, E, Australian MODEL
E MODEL
EXCEPT E MODEL
POWER
ON
OFF
STANDBY
AC IN
SW201 VOLTAGE SELECTOR
220-240V
110-120V
X901 3.58MHz
X401 4.19MHz
X351 22.5MHz
C715 RMOUT
TIMER ON OFF
SW822 TIMER
SW801 4MHz
M1 SPINDLE MOTOR
M2 SLED MOTOR
M701 TABLE MOTOR
M702 LOADING MOTOR
S101 LIMIT SW
S701 DOWN SW
S702 OPEN ← UP
DEFECT SWITCH Q101
D701 TABLE SENSOR
D351
D208
D209
D801
D802
D803
D755
D756
D757
D758
D759
Q602
Q603, 604
Q601
Q573
Q574
Q575
Q576
Q577
D575
D206
D207
D208
D209
D801
D802
D803
D804
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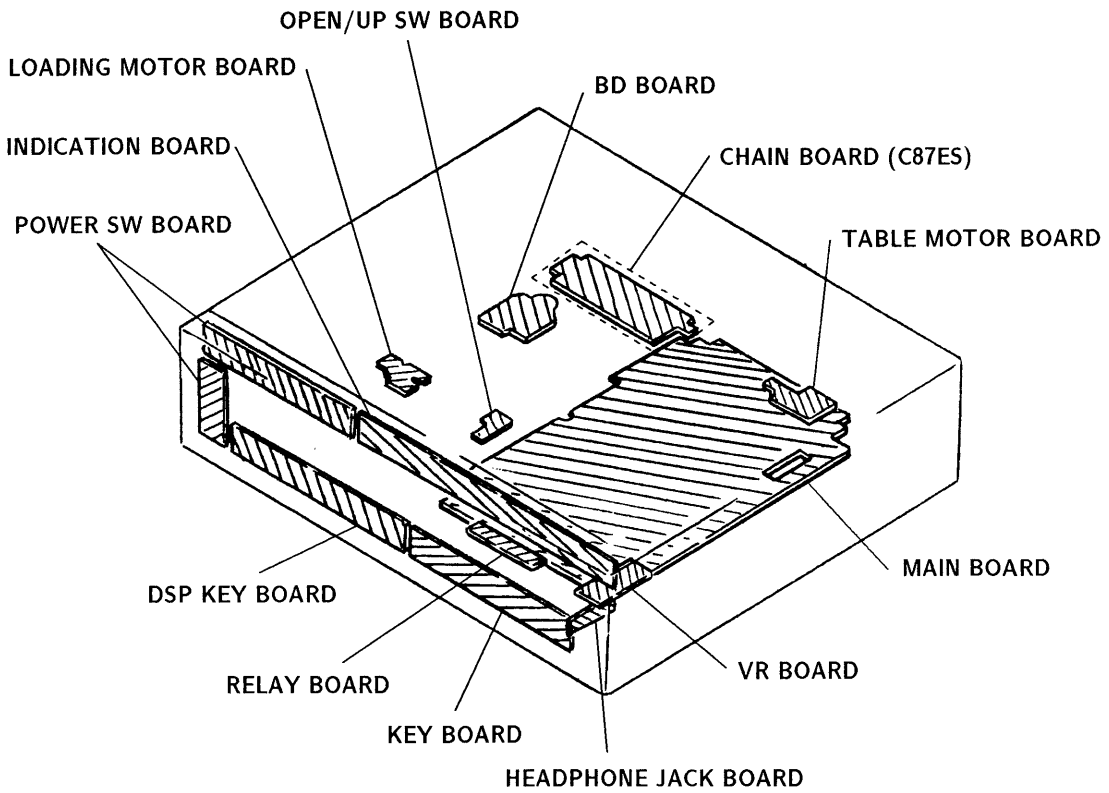
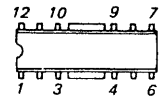
D838
D839
D840

5-2. CIRCUIT BOARDS LOCATION

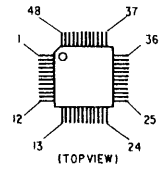


5-3. SEMICONDUCTOR LEAD LAYOUTS

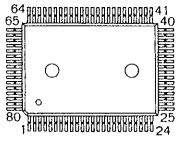
CXA1291P



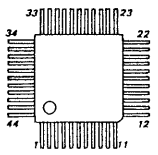
CXA1372Q



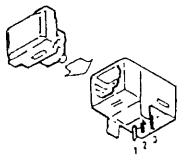
CXD2500AQ
MSC62408-023GS-VIK
MSC62408-026GS-VIK
μPD75516GF-257-3B9
μPD75516GF-264-3B9



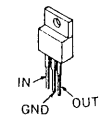
CXD2701Q



GP1F31T



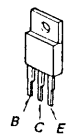
M5F7807L



BN1L3Z-K
DTA114ES
DTA124ES
DTA144ES
DTC114ES
DTC144ES
DTC144WS
2SC3622A-LK

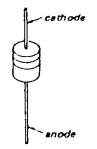
2SB734-34
2SD774-34

2SB1274SA-RS

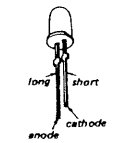


2SC1815-Y
2SC3622A-K
2SC3623A-L
2SC2878-AB

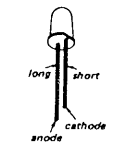
RD5.1ES-B2
RD5.6ES-B
1SS120
11EQS04
11ES2



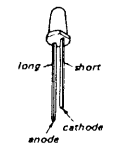
AA5534S



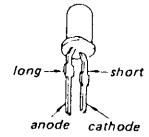
BG5534S



BG5535S



SEL2810A-C



5-4. PRINTED WIRING BOARDS —MAIN BOARD SECTION—

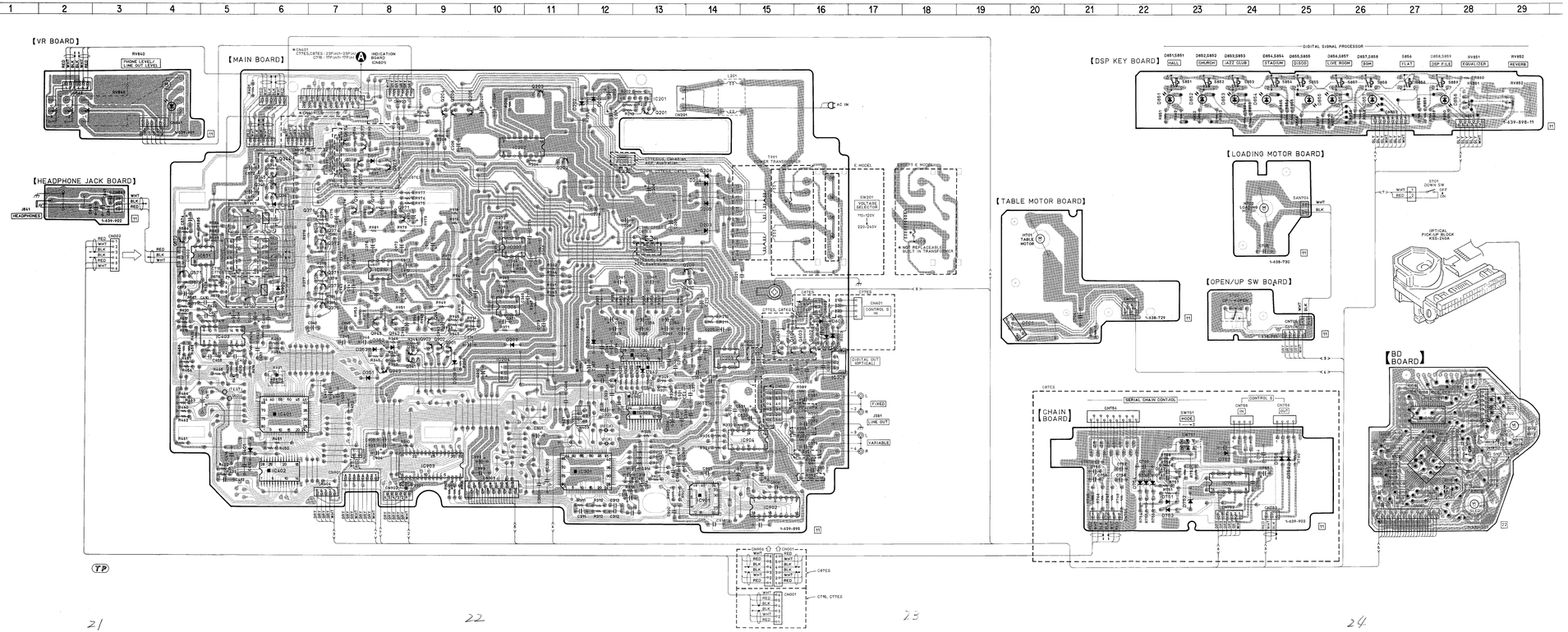
• Refer to page 19 for Semiconductor Lead Layouts.

• **SEMICONDUCTOR LOCATION**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D201	B-12	IC101	I-27	Q347	D-6
D202	B-12	IC102	H-27	Q371	E-7
D203	D-14	IC201	B-13	Q372	E-7
D204	D-14	IC202	C-10	Q373	F-7
D205	D-14	IC203	G-14	Q374	D-7
D206	C-14	IC204	G-10	Q375	F-7
D208	G-9	IC301	I-12	Q376	D-7
D209	G-10	IC302	H-13	Q571	E-4
D341	G-12	IC303	G-13	Q572	E-4
D342	G-13	IC306	F-10	Q573	C-7
D351	G-8	IC307	E-10	Q574	C-7
D352	G-8	IC308	G-16	Q575	C-7
D353	G-8	IC401	H-6	Q576	C-8
D401	I-5	IC402	I-6	Q577	C-7
D571	C-8	IC403	F-5	Q601	G-15
D601	F-16	IC571	E-5	Q602	G-16
D602	F-16	IC751	I-24	Q603	G-16
D603	F-16	IC901	I-14	Q604	G-16
D701	F-20	IC902	J-15	Q901	G-9
D751	I-22	IC903	I-9	Q902	G-9
D752	I-23	IC904	H-15	Q903	G-9
D753	J-22	IC910	E-8	Q941	F-9
D754	I-22			Q942	F-8
D755	I-22			Q943	F-8
D756	I-22	Q101	I-28	Q971	D-8
		Q201	B-13		
D757	I-23	Q202	C-11	Q972	D-8
D758	I-25	Q203	B-11	Q973	D-7
D759	I-25	Q204	B-9		
D851	B-23				
D852	B-23	Q205	B-9		
		Q206	B-9		
D853	B-24	Q209	E-14		
D854	B-24	Q210	E-14		
D855	B-25	Q341	G-8		
D856	B-26				
D857	B-26	Q342	G-8		
		Q343	G-8		
D858	B-27	Q344	C-6		
D901	D-6	Q345	C-6		
D902	F-6	Q346	D-6		

Note :

- ○— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒▒ : Pattern on the side which is seen.



5-5. SCHEMATIC DIAGRAMS —MAIN BOARD SECTION—

• Refer to page 35 for IC Block Diagrams.

Note :

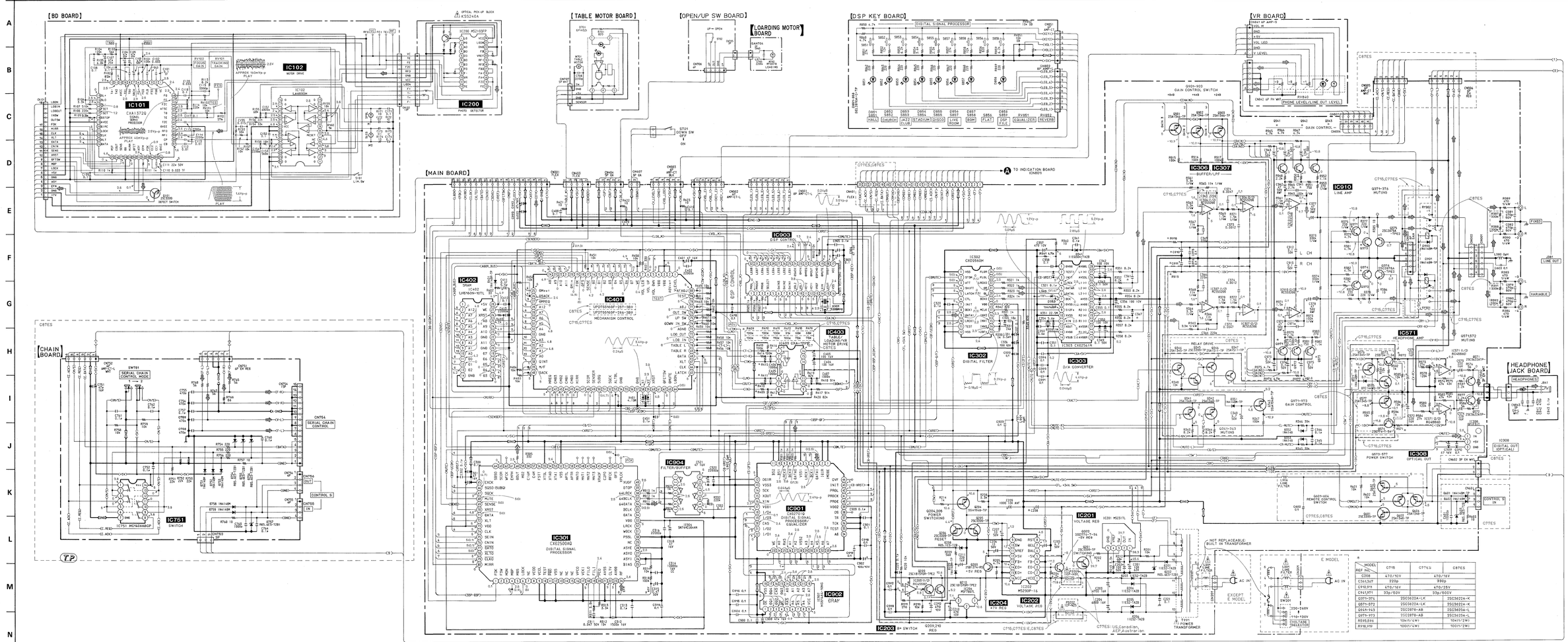
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note:
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▪▪▪ : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
  ( ) : PLAY
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.

- Signal path.
- ⇨ : CD
- ⇨ : digital out

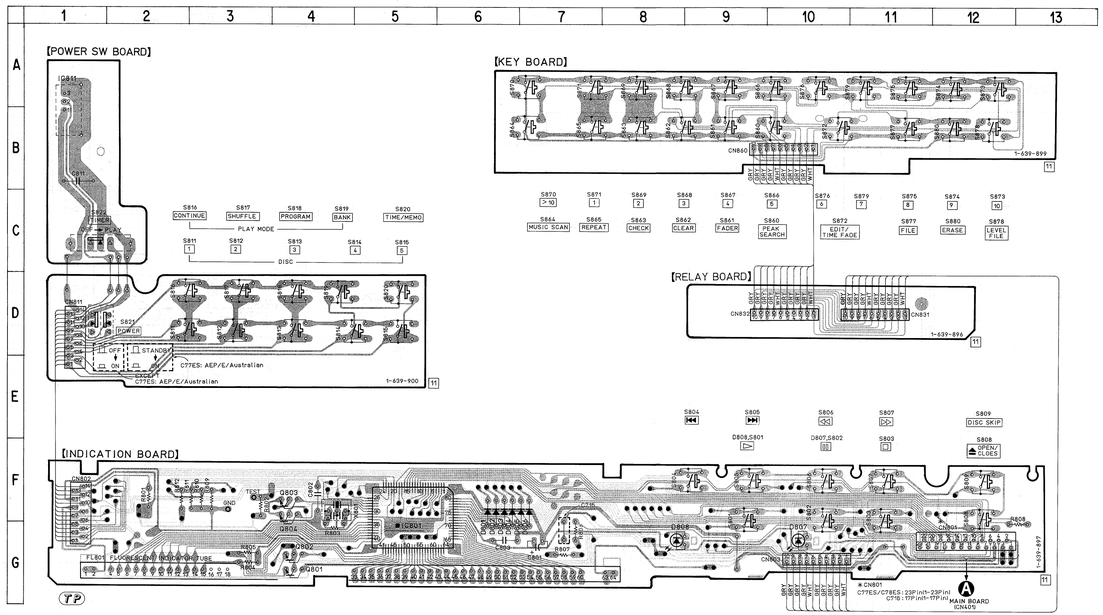


MODEL	C715	C715,S	C85ES
REF NO.			
C208	470/10V	470/16V	
C341,347	220p	330p	
C910,911	470/16V	470/25V	
C943,971	33p/50V	39p/500V	
Q371-374	2SC3622A-LK	2SC3622A-K	
Q571-572	2SC3622A-LK	2SC3622A-K	
Q943-945	2SC2878-AB	2SC3633A-L	
Q971-973	2SC2878-AB	2SC3633A-L	
R595,596	10k(1%)/1W	10k(1%)/2W	
R598,599	100Ω(1%)/1W	100Ω(1%)/2W	

5-6. PRINTED WIRING BOARDS –INDICATION BOARD SECTION– • Refer to page 19 for Semiconductor Lead Layouts.

• SEMICONDUCTOR LOCATION

Ref. No.	Location
D801	F-6
D802	F-6
D803	F-6
D804	F-6
D805	F-7
D806	F-7
D807	G-10
D808	G-8
IC801	F-5
IC811	A-1
Q801	G-4
Q802	G-4
Q803	F-4
Q804	F-4



Note :

- ○— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

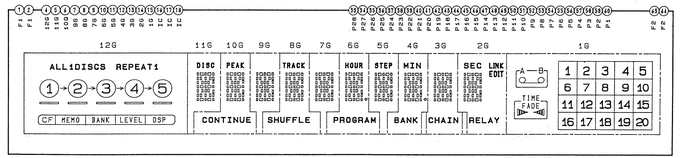
Note :

- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

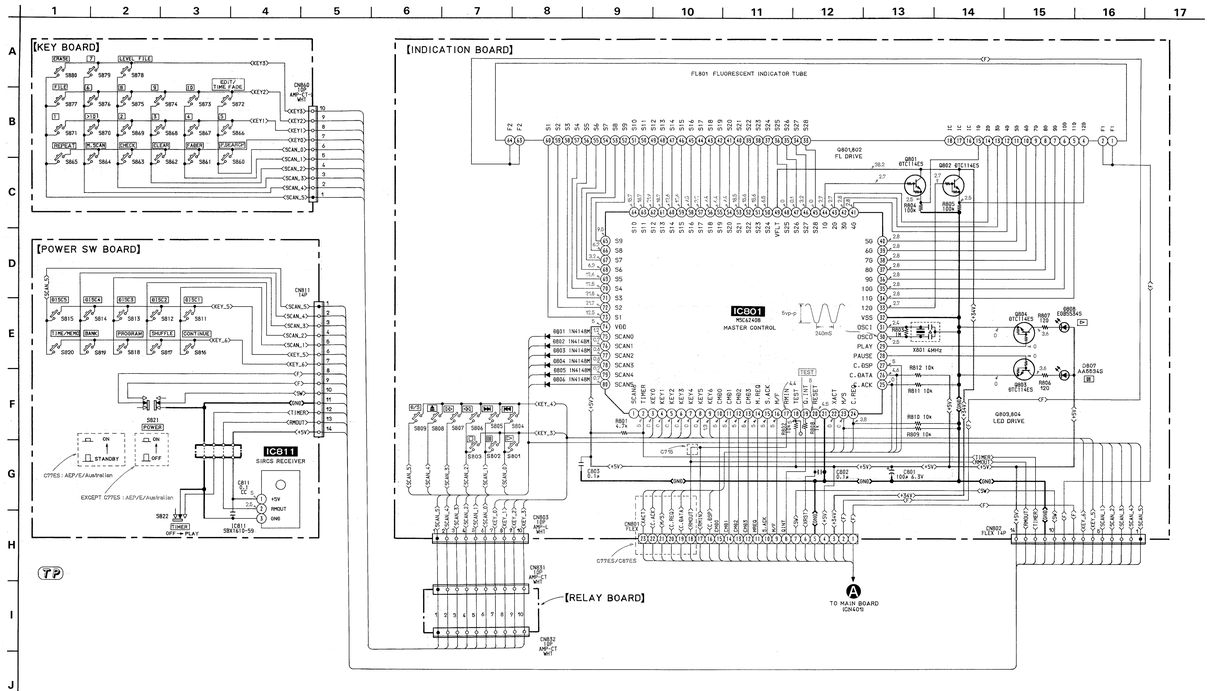
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line
- ▬ ▬ ▬ : B– Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
  ( ) : PLAY
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : CD
  ⇨ : digital out

FL801
FLUORESCENT INDICATOR TUBE

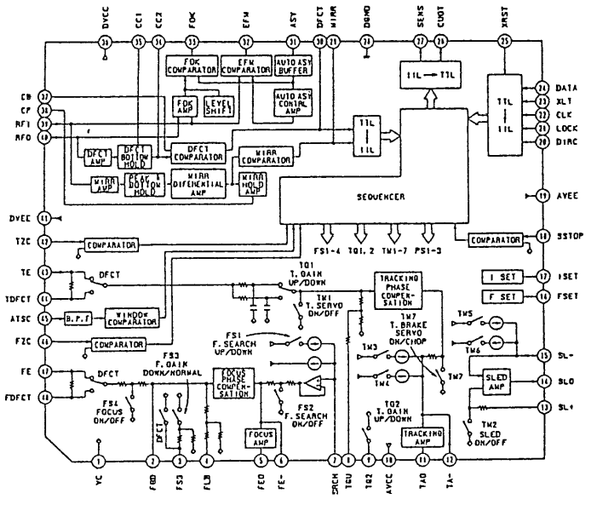


5-7. SCHEMATIC DIAGRAM –INDICATION BOARD SECTION– • Refer to page 35 for IC Block Diagrams.

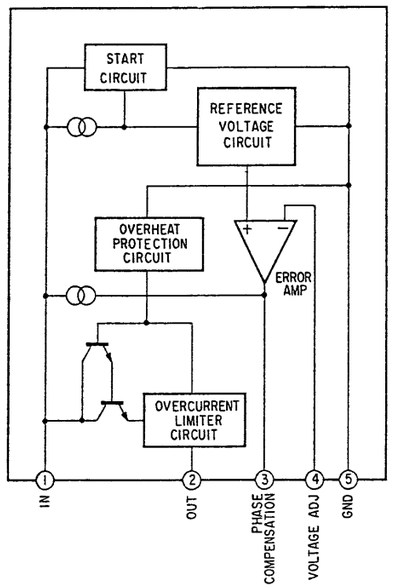


5-8. IC BLOCK DIAGRAMS

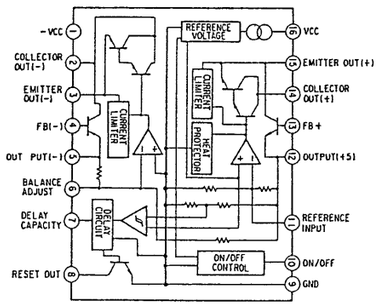
IC101 CXD1372Q



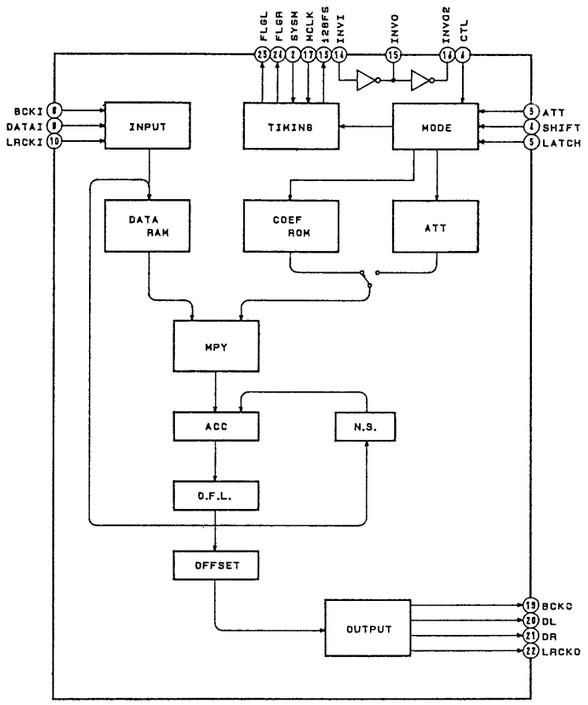
IC201 M5231TL



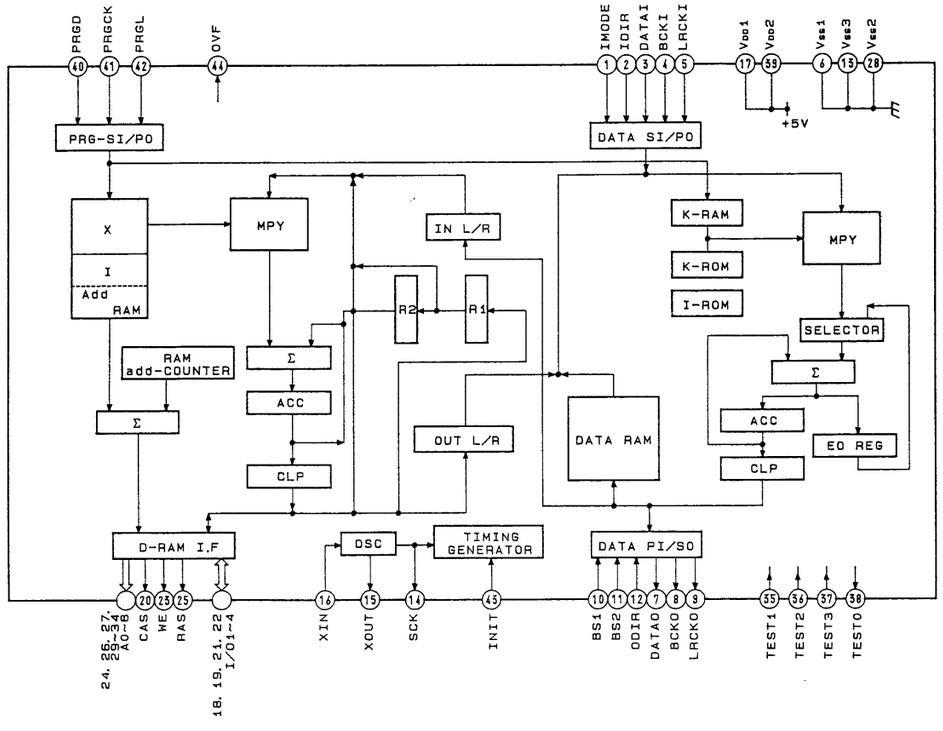
IC202 M5290P-16



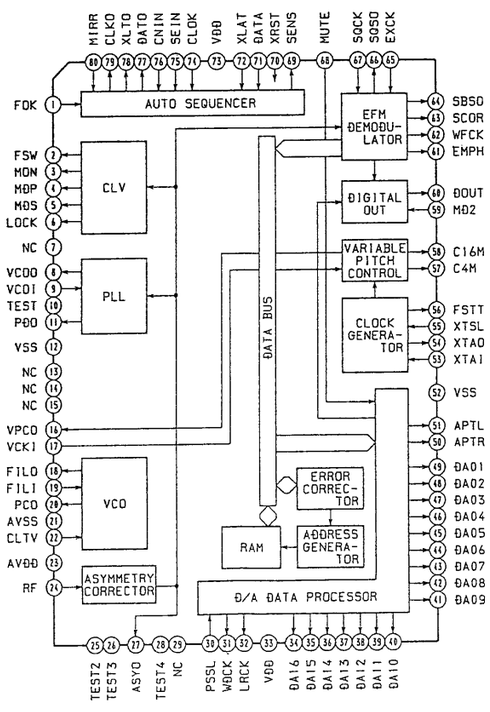
IC302 CXD2560M



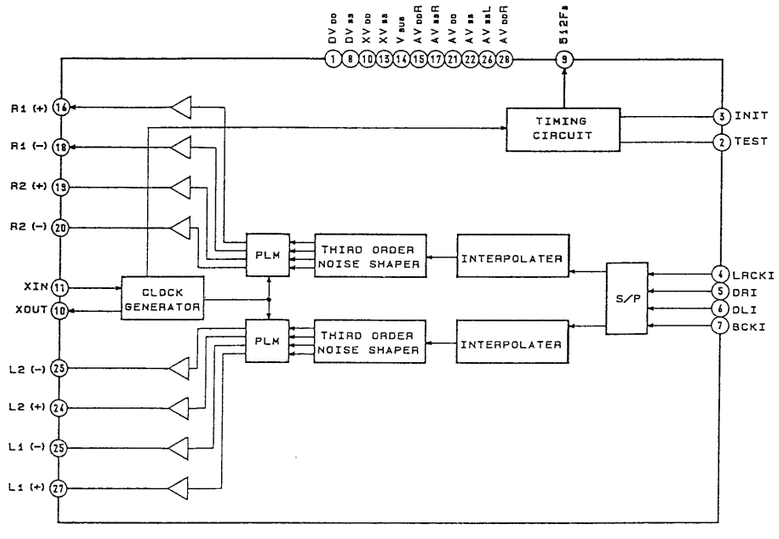
IC901 CXD2701Q



IC301 CXD2500Q



IC303 CXD2561M



SECTION 6
EXPLODED VIEWS

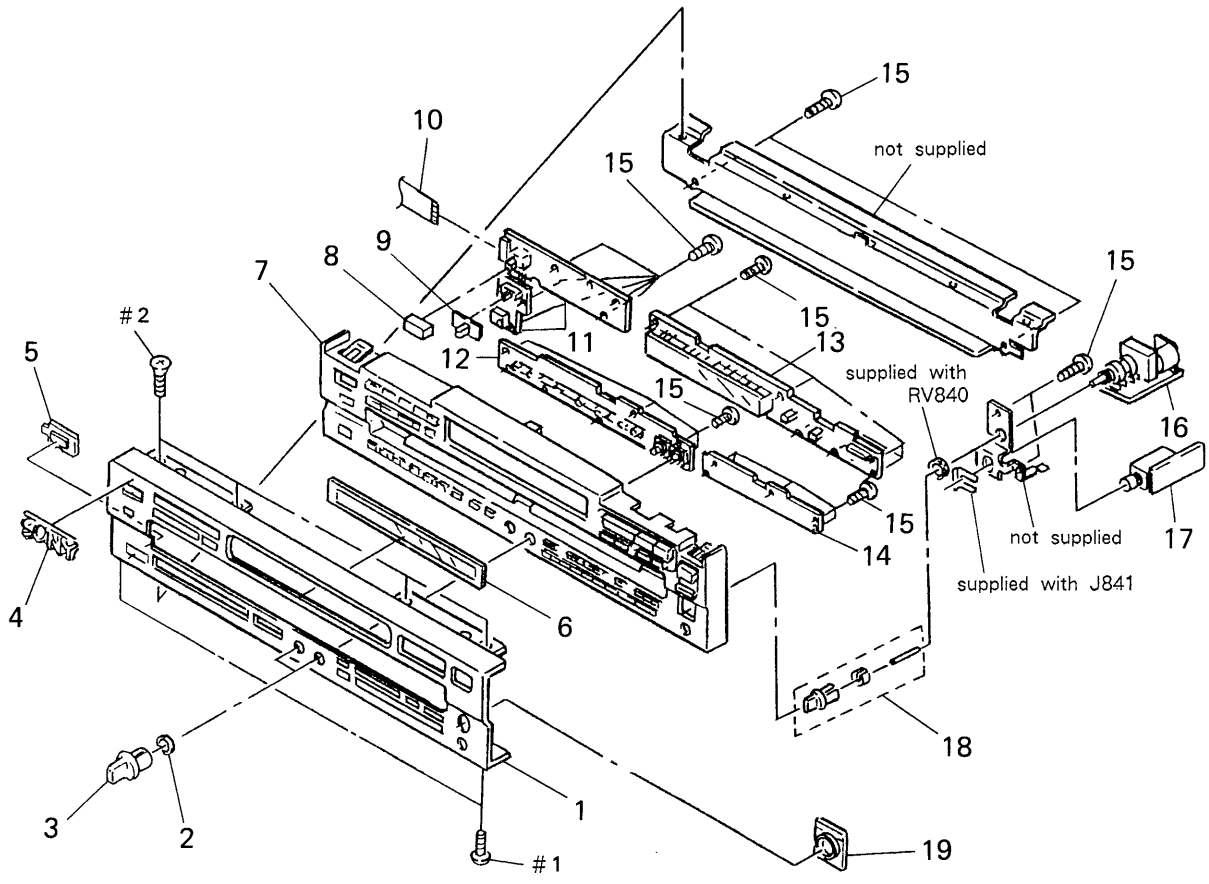
NOTE:

- —XX, —X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE)....(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

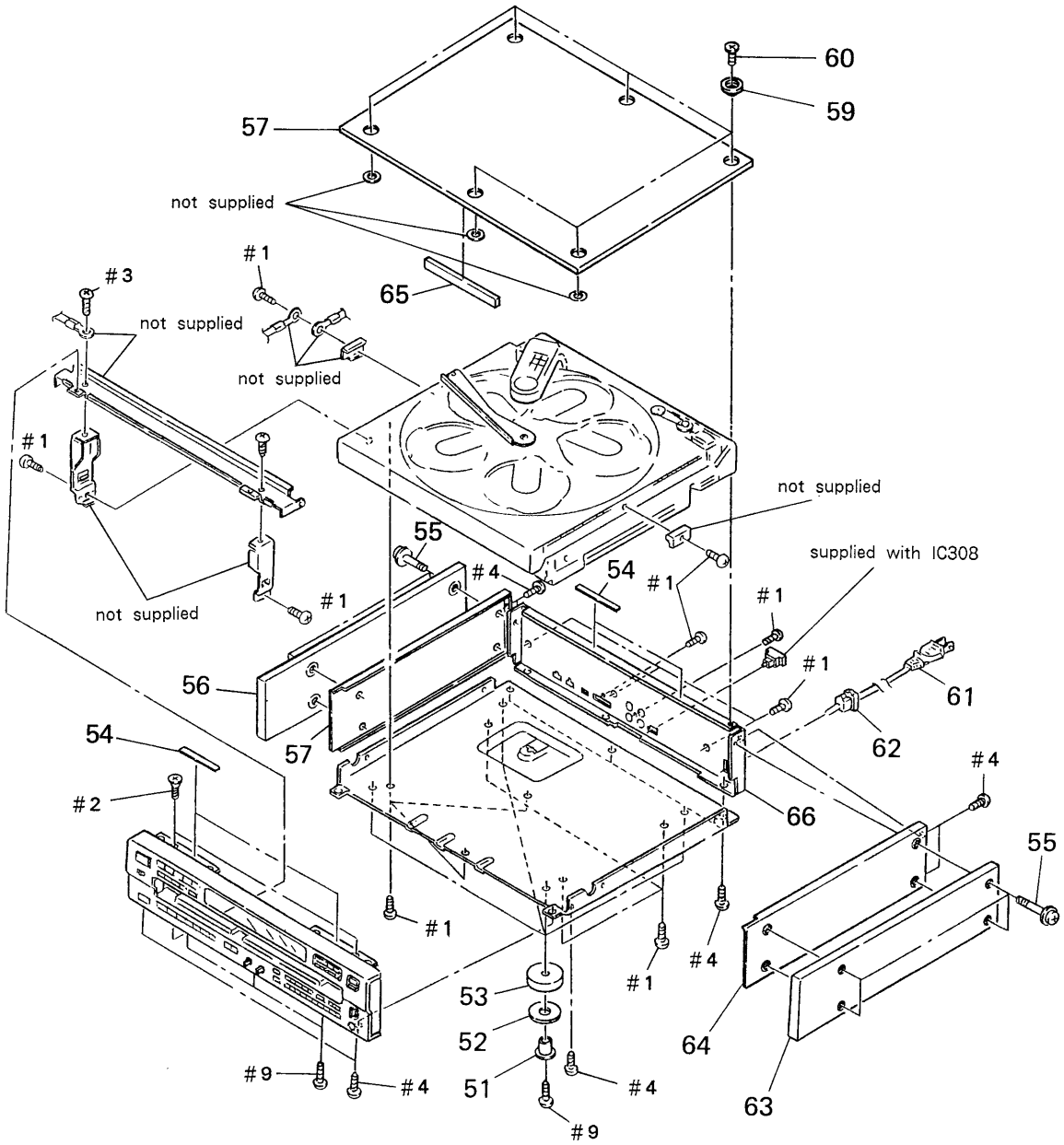
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	4-944-307-01	PANEL, FRONT (C87ES)	
1	4-944-307-11	PANEL, FRONT (C77ES:US, Canadian)	
1	4-944-307-21	PANEL, FRONT (C715)	
1	4-944-307-31	PANEL, FRONT (C77ES:AEP, E, AUS)	
2	3-354-981-01	SPRING (SUS), RING	
3	4-944-154-01	KNOB (DSP)	
4	4-908-848-01	EMBLEM, SONY	
5	4-945-432-01	PLATE, INDICATION	
6	4-945-418-01	PLATE (FL), INDICATION	
7	X-4941-638-1	PANEL (BASE) ASSY	
8	4-922-921-01	BUTTON (POWER)	
9	4-922-518-11	KNOB (TIMER)	
10	1-590-868-11	WIRE, FLAT TYPE	
11	* 1-639-900-11	POWER SW BOARD	
12	* A-4617-868-A	DSP KEY BOARD, COMPLETE	
13	* A-4617-867-A	INDICATION BOARD, COMPLETE (C77ES/C87ES)	
13	* A-4617-914-A	INDICATION BOARD, COMPLETE (C715)	
14	* 1-639-899-11	KEY BOARD	
15	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
16	* 1-639-901-11	VR BOARD	
17	* 1-639-902-11	HEADPHONE JACK BOARD	
18	A-4675-298-A	KNOB (HP) ASSY	
19	4-945-420-01	PLATE (HP), INDICATION	

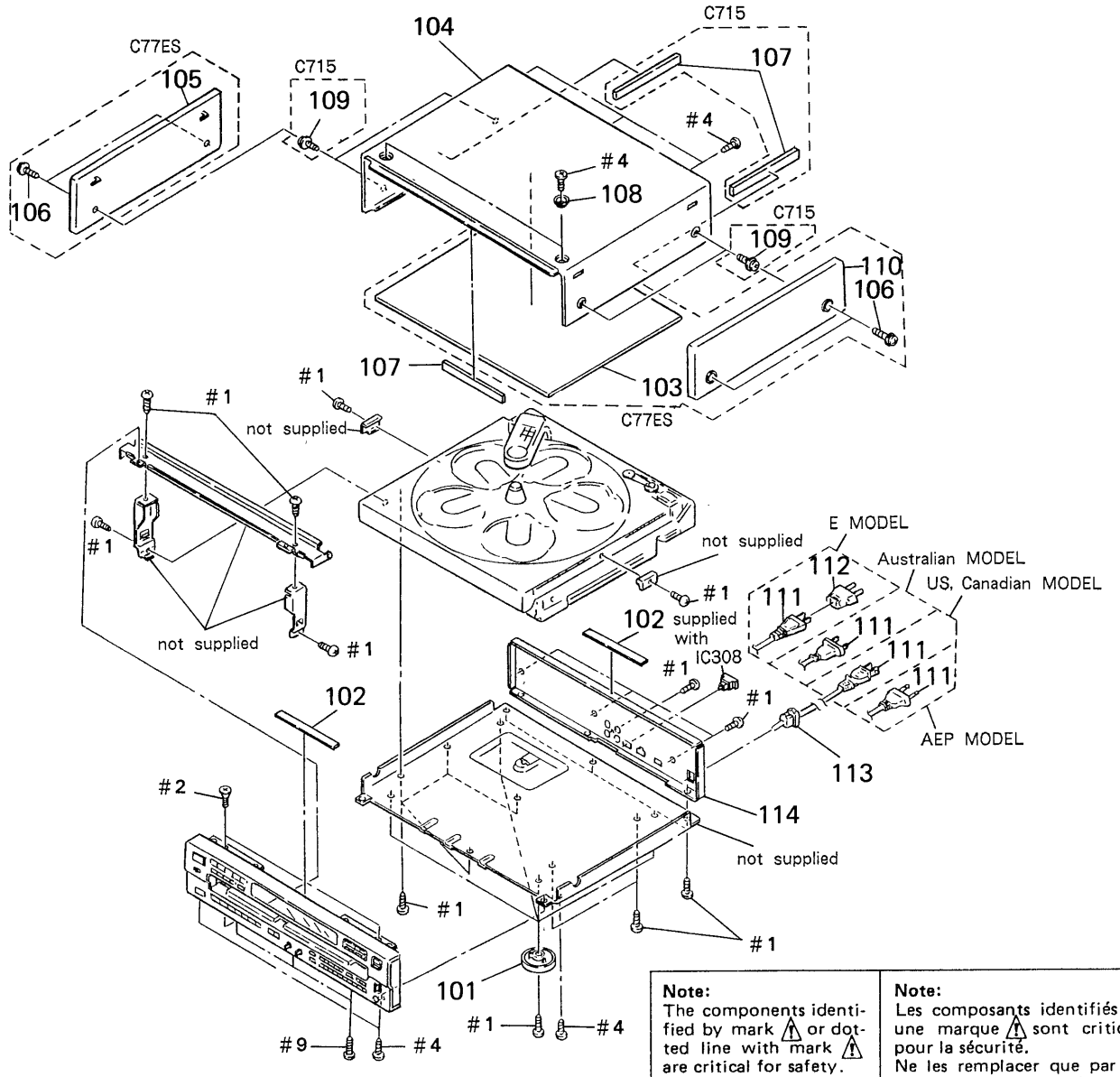
6-2. CABINET SECTION (CDP-C87ES)



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.		Part No.	Description	Remark
51		4-945-430-01	COLLER (C87ES)	
52		4-935-912-01	FOOT (CUSHION) (C87ES)	
53		4-928-028-01	BASE, FOOT (C87ES)	
54	*	4-927-653-01	SHEET (F/P)	
55		4-933-446-01	SCREW (SIDE PANEL) (C87ES)	
56		X-4941-640-1	PANEL (L) ASSY, SIDE (C87ES)	
57	*	4-945-428-01	PLATE (L), SIDE (C87ES)	
58		4-945-422-01	PLATE, TOP (C87ES)	
59		4-928-025-11	ESCUTCHEON (TOP PLATE)	
60		4-924-242-11	SCREW (M3X6), FLAT HEAD (C87ES)	
61	⚠	1-559-583-21	CORD, POWER (C87ES)	
62	*	3-703-244-00	BUSHING (2104), CORD	
63		X-4941-641-1	PANEL (R) ASSY, SIDE (C87ES)	
64	*	4-945-429-01	PLATE (R), SIDE (C87ES)	
65	*	4-929-561-01	CUSHION (CASE)	
66	*	4-943-718-01	PANEL, BACK (C87ES)	

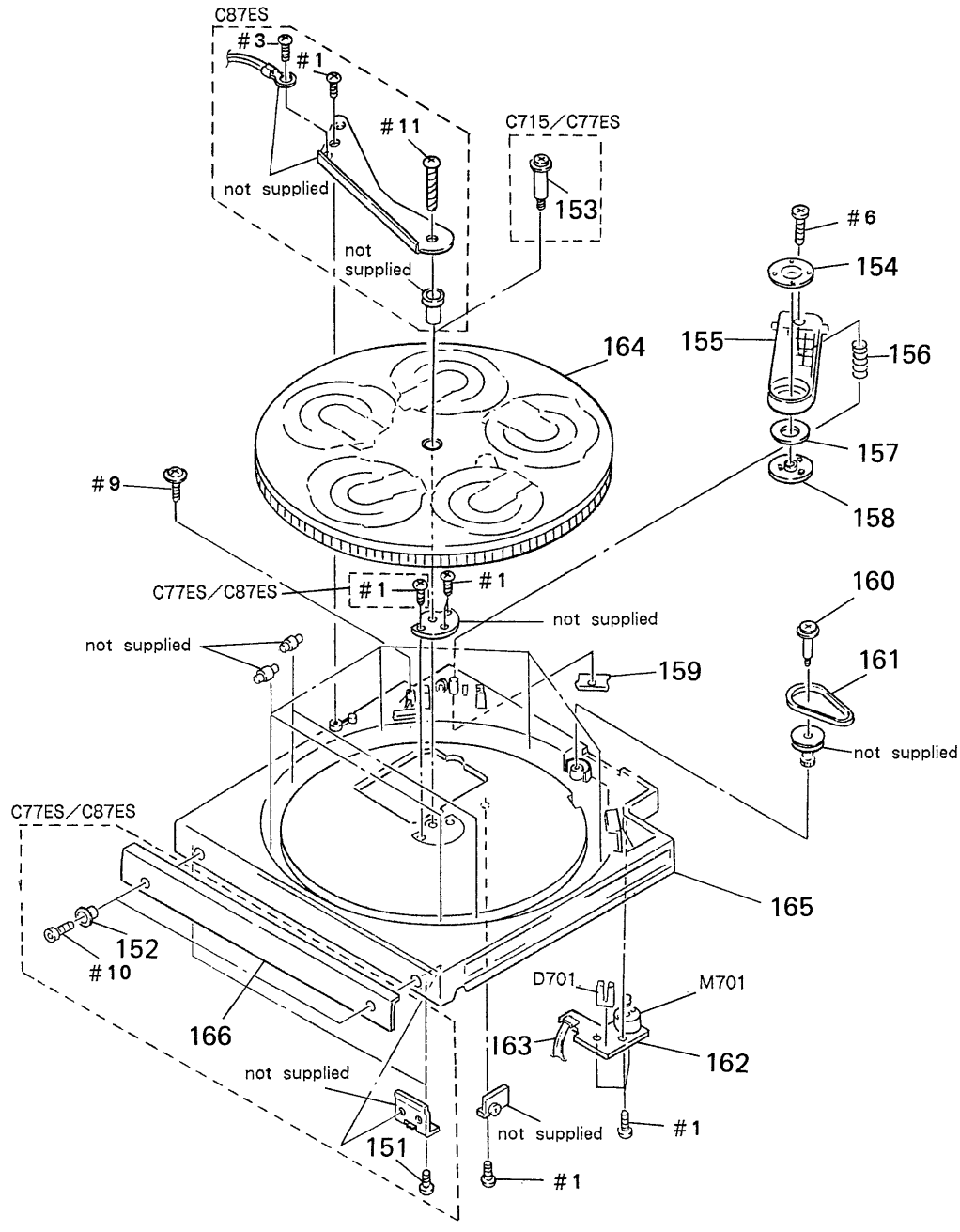
6-3. CABINET SECTION (CDP-C715／C77ES)



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	X-4924-463-1	FOOT ASSY (C77ES)	
101	X-4924-464-1	FOOT ASSY (C715)	
102	* 4-927-653-01	SHEET (F/P)	
103	A-4675-309-A	REINFORCEMENT (TOP PLATE) ASSY (C77ES)	
104	* 4-937-934-01	CASE (C715/C77ES)	
105	X-4924-465-1	PANEL (L) ASSY, SIDE (C77ES)	
106	4-933-446-01	SCREW (SIDE PANEL) (C77ES)	
107	* 4-929-561-01	CUSHION (CASE)	
108	4-928-025-11	ESCUTCHEON (TOP PLATE)	
109	3-704-366-01	SCREW (CASE) (M3X8) (C715)	
110	X-4924-466-1	PANEL (R) ASSY, SIDE (C77ES)	
111	⚠ 1-558-181-21	CORD, POWER (E)	
111	⚠ 1-558-568-21	CORD, POWER (AEP)	
111	⚠ 1-559-583-21	CORD, POWER (C77ES:US, Canadian)	
111	⚠ 1-575-379-21	CORD, POWER (AUS)	
111	⚠ 1-590-836-11	CORD, POWER (C715:US, Canadian)	
112	⚠ 1-569-007-11	ADAPTER, CONVERSION 2P (E)	
113	* 3-703-244-00	BUSHING (2104), CORD	
114	* 4-943-719-01	PANEL, BACK (C77ES:US)	
114	* 4-943-719-11	PANEL, BACK (C77ES:Canadian)	
114	* 4-943-719-21	PANEL, BACK (C715:US)	
114	* 4-943-719-31	PANEL, BACK (C715:Canadian)	
114	* 4-943-719-41	PANEL, BACK (E)	
114	* 4-943-719-51	PANEL, BACK (AUS)	
114	* 4-943-719-61	PANEL, BACK (AEP)	

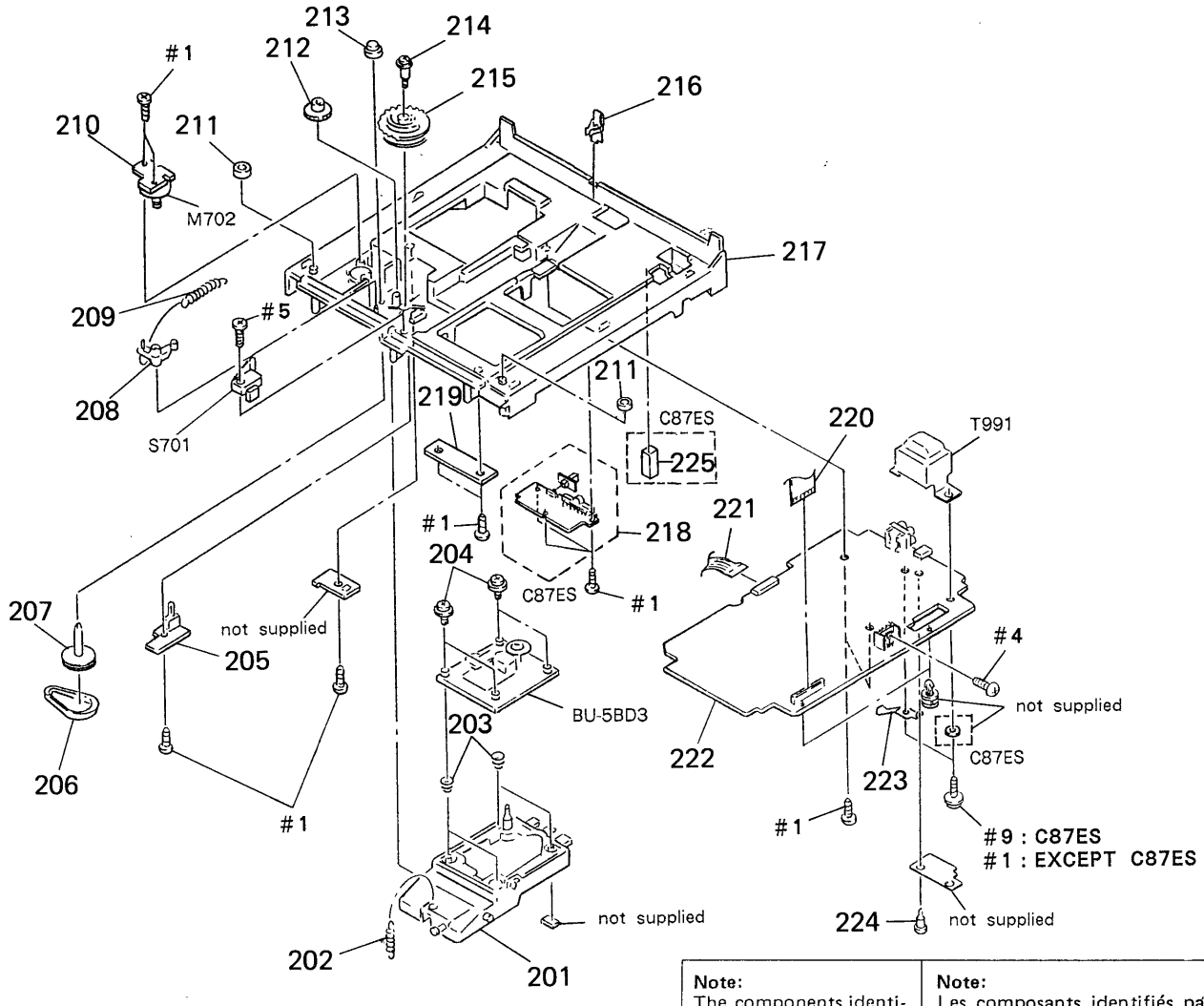
6-4. DISC TABLE SECTION



Ref. No.	Part No.	Description	Remark
151	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
152	4-934-307-01	ESCUTCHEON (C77ES/C87ES)	
153	4-926-384-01	SCREW, STEP (C715/C77ES)	
154	4-921-029-01	YOKE, CHUCKING	
155	* 4-930-506-02	BRACKET (PRESS PULLEY)	
156	4-926-395-01	SPRING, COMPRESSION	
157	1-452-340-21	MAGNET	
158	4-921-022-01	PULLEY, CHUCKING	
159	* 4-926-388-01	BRACKET (ADJUSTMENT)	
160	4-923-597-01	SCREW, STEP	
161	4-926-399-01	BELT	
162	* 1-638-729-11	TABLE MOTOR BOARD	
163	1-590-849-11	WIRE, FLAT TYPE (5 CORE)	

Ref. No.	Part No.	Description	Remark
164	* 4-926-383-01	TABLE (B), DISK (C715)	
164	4-926-383-11	TABLE (B), DISK (C77ES)	
164	4-944-305-01	TABLE (B), DISC (C87ES)	
165	4-944-160-01	TABLE (A), DISC (C715)	
165	4-944-777-02	TABLE (A), DISC (C77ES/C87ES)	
166	4-944-779-01	PANEL (TABLE) (C87ES)	
166	4-944-779-11	PANEL (TABLE) (C77ES)	
D701	8-719-970-19	DIODE GP1A521	
M701	A-4604-585-A	MOTOR ASSY, ROTARY	

6-5. CHASSIS SECTION

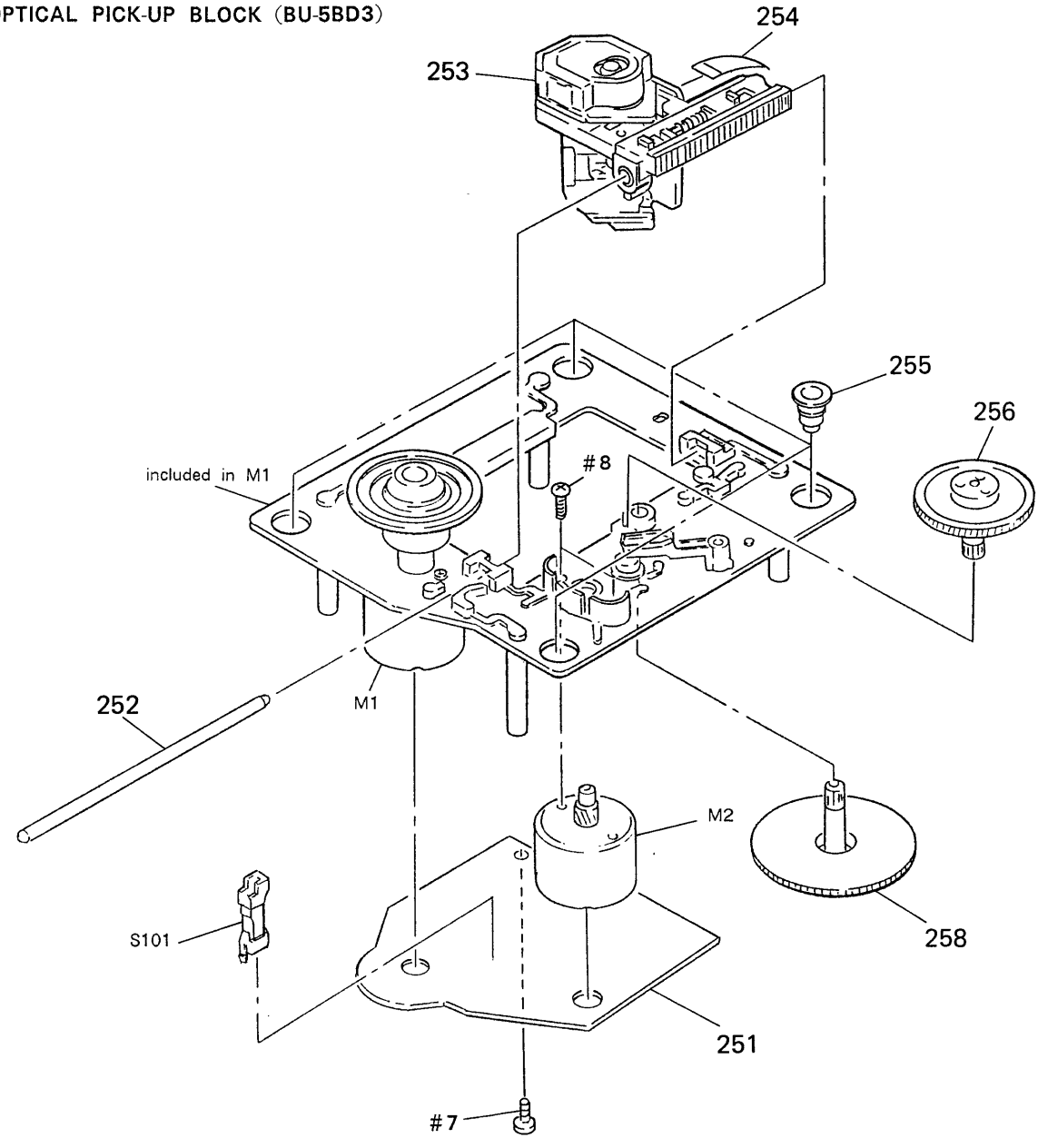


Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
201	* 4-934-373-01	BRACKET (BU)	
202	4-937-911-01	SPRING, TENSION	
203	4-917-541-01	SPRING (B)	
204	4-933-134-01	SCREW (+PTPWH M2.6X6)	
205	* 1-638-731-11	OPEN/UP SW BOARD	
206	4-944-493-01	BELT (RIBSTAR)	
207	4-944-491-01	PULLEY (LOADING A)	
208	4-917-519-01	LEVER, SET	
209	4-924-412-01	SPRING (B), TENSION	
210	* 1-638-730-11	LOADING MOTOR BOARD	
211	* 4-934-382-01	CUSHION	
212	4-934-381-01	GEAR (LOADING C)	
213	4-934-375-01	GEAR (LOADING B)	
214	4-926-317-01	SCREW, STEP	
215	4-934-391-01	GEAR (LOADING A)	
216	* 4-943-996-01	SPRING, LEAF	
217	* 4-943-997-01	CHASSIS	
218	* A-4617-872-A	CHAIN BOARD, COMPLETE (C87ES)	
219	* 1-639-896-11	RELAY BOARD	

Ref. No.	Part No.	Description	Remark
220	1-590-867-11	WIRE, FLAT TYPE (C77ES/C87ES)	
220	1-590-928-11	WIRE, FLAT TYPE (17 CORE) (C715)	
221	1-535-892-11	JUMPER, FILM (WITH TERMINAL)	
222	* A-4617-873-A	MAIN BOARD, COMPLETE (C87ES)	
222	* A-4617-875-A	MAIN BOARD, COMPLETE (C77ES:US, Canadian, AEP, AUS)	
222	* A-4617-876-A	MAIN BOARD, COMPLETE (C77ES:E)	
222	* A-4617-878-A	MAIN BOARD, COMPLETE (C715)	
223	* 4-930-512-01	PLATE, GROUND	
224	3-531-576-11	RIVET	
225	* 4-947-112-01	CUSHION	
M702	A-4604-871-A	MOTOR ASSY, LOADING	
S701	1-572-713-11	SWITCH, PUSH (WITH CONNECTOR)	
T991	⚠ 1-450-542-11	TRANSFORMER, POWER (US, Canadian)	
T991	⚠ 1-450-543-11	TRANSFORMER, POWER (AEP, AUS)	
T991	⚠ 1-450-544-11	TRANSFORMER, POWER (E)	

6-6. OPTICAL PICK-UP BLOCK (BU-5BD3)



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.		Part No.	Description	Remark
251	*	A-4617-371-A	BD BOARD, COMPLETE	
252		4-917-565-01	SHAFT, SLED	
253	⚠	8-848-144-11	DEVICE, OPTICAL KSS-240A	
254		1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
255		4-933-126-01	INSULATOR (A)	

Ref. No.	Part No.	Description	Remark
256	4-917-567-01	GEAR (M)	
258	4-917-564-01	GEAR (P), FLATNESS	
M1	X-4917-523-3	BASE (OUTSERT) ASSY	
M2	X-4917-504-1	MOTOR ASSY	
S101	1-572-085-11	SWITCH, LEAF (LIMIT SW)	

SECTION 7
ELECTRICAL PARTS LIST

BD

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- —XX, —X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA....: μA...., uPA....: μPA....
  uPB....: μPB...., uPC....: μPC....
  uPD....: μPD....
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark
	* A-4617-371-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C102	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C103	1-126-163-11	ELECT	4.7uF	20%	50V
C104	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C105	1-126-154-11	ELECT	47uF	20%	6.3V
C106	1-126-154-11	ELECT	47uF	20%	6.3V
C107	1-126-154-11	ELECT	47uF	20%	6.3V
C108	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-131-367-00	TANTALUM	22uF	10%	20V
C112	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C113	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C114	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C115	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C117	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C118	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C119	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C120	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C151	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C152	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C153	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C154	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C155	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C172	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C173	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN101	1-568-796-11	SOCKET, CONNECTOR 22P			
CN102	1-568-795-11	SOCKET, CONNECTOR 12P			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC101	8-752-050-82	IC CXA1372Q			
IC102	8-759-822-36	IC LA6532M-T1			
		< JACK >			
J101	1-216-295-00	METAL CHIP	0	5%	1/10W
J102	1-216-295-00	METAL CHIP	0	5%	1/10W
		< TRANSISTOR >			
Q101	8-729-901-01	TRANSISTOR DTC144EK			
		< RESISTOR >			
R101	1-216-097-00	METAL CHIP	100K	5%	1/10W
R102	1-216-095-00	METAL CHIP	82K	5%	1/10W
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W
R104	1-216-099-00	METAL CHIP	120K	5%	1/10W
R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-114-00	METAL GLAZE	510K	5%	1/10W
R108	1-216-105-00	METAL CHIP	220K	5%	1/10W
R109	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-079-00	METAL CHIP	18K	5%	1/10W
R158	1-216-079-00	METAL CHIP	18K	5%	1/10W
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W

BD CHAIN DSP KEY

Ref. No.	Part No.	Description			Remark
R172	1-216-001-00	METAL CHIP	10	5% 1/10W	
R173	1-216-001-00	METAL CHIP	10	5% 1/10W	
R174	1-216-001-00	METAL CHIP	10	5% 1/10W	
		< VARIABLE RESISTOR >			
RV101	1-238-016-11	RES, ADJ, CARBON 10K (TRACKING GAIN)			
RV102	1-238-016-11	RES, ADJ, CARBON 10K (FOCUS GAIN)			
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT SW)			
**********					
* A-4617-872-A		CHAIN BOARD, COMPLETE (C87ES)			
		**********			
		< CAPACITOR >			
C751	1-126-022-11	ELECT	47uF	20% 16V (C87ES)	
C752	1-164-159-11	CERAMIC	0.1uF	50V (C87ES)	
C755	1-130-467-00	MYLAR	470PF	5% 50V (C87ES)	
C756	1-130-467-00	MYLAR	470PF	5% 50V (C87ES)	
C757	1-136-165-00	FILM	0.1uF	5% 50V (C87ES)	
C758	1-130-467-00	MYLAR	470PF	5% 50V (C87ES)	
C759	1-130-467-00	MYLAR	470PF	5% 50V (C87ES)	
C760	1-164-159-11	CERAMIC	0.1uF	50V (C87ES)	
C761	1-164-159-11	CERAMIC	0.1uF	50V (C87ES)	
C762	1-164-159-11	CERAMIC	0.1uF	50V (C87ES)	
C763	1-162-294-31	CERAMIC	0.001uF	10% 50V (C87ES)	
C764	1-164-159-11	CERAMIC	0.1uF	50V (C87ES)	
		< CONNECTOR >			
CN751	* 1-564-521-11	PLUG, CONNECTOR 6P (C87ES)			
CN752	* 1-568-944-11	PIN, CONNECTOR 6P (C87ES)			
CN753	* 1-564-518-11	PLUG, CONNECTOR 3P (C87ES)			
CN754	* 1-566-859-11	SOCKET, CONNECTOR 15P (SERIAL CHAIN CONTROL) (C87ES)			
CN755	1-566-213-11	PIN, CONNECTOR 4P (C87ES)			
CN756	1-566-213-11	PIN, CONNECTOR 4P (C87ES)			
		< DIODE >			
D751	8-719-912-20	DIODE	1SS120 (C87ES)		
D752	8-719-912-20	DIODE	1SS120 (C87ES)		
D753	8-719-912-20	DIODE	1SS120 (C87ES)		
D754	8-719-109-87	DIODE	RD5.6ES-B (C87ES)		
D755	8-719-109-87	DIODE	RD5.6ES-B (C87ES)		
D756	8-719-109-87	DIODE	RD5.6ES-B (C87ES)		
D757	8-719-109-87	DIODE	RD5.6ES-B (C87ES)		
D758	8-719-912-20	DIODE	1SS120 (C87ES)		
D759	8-719-912-20	DIODE	1SS120 (C87ES)		

Ref. No.	Part No.	Description			Remark
		< IC >			
IC751	8-759-000-49	IC TC4066BPHB (C87ES)			
		< RESISTOR >			
R751	1-249-433-11	CARBON	22K	5% 1/4W (C87ES)	
R752	1-249-433-11	CARBON	22K	5% 1/4W (C87ES)	
R753	1-249-433-11	CARBON	22K	5% 1/4W (C87ES)	
R754	1-249-409-11	CARBON	220	5% 1/4W (C87ES)	
R755	1-249-409-11	CARBON	220	5% 1/4W (C87ES)	
R756	1-249-409-11	CARBON	220	5% 1/4W (C87ES)	
R757	1-249-393-11	CARBON	10	5% 1/4W (C87ES)	
R758	1-249-429-11	CARBON	10K	5% 1/4W (C87ES)	
R759	1-249-429-11	CARBON	10K	5% 1/4W (C87ES)	
R760	1-249-393-11	CARBON	10	5% 1/4W (C87ES)	
R765	1-249-402-11	CARBON	56	5% 1/4W (C87ES)	
R766	1-249-402-11	CARBON	56	5% 1/4W (C87ES)	
R767	1-249-402-11	CARBON	56	5% 1/4W (C87ES)	
R768	1-249-402-11	CARBON	56	5% 1/4W (C87ES)	
		< SWITCH >			
SW751	1-570-707-21	SWITCH, SLIDE (MODE) (C87ES)			
**********					
* A-4617-868-A		DSP KEY BOARD, COMPLETE			
		**********			
	4-945-417-01	HOLDER (LED)			
		< DIODE >			
D851	8-719-301-52	DIODE	SEL2810A-C (HALL)		
D852	8-719-301-52	DIODE	SEL2810A-C (CHURCH)		
D853	8-719-301-52	DIODE	SEL2810A-C (JAZZ CLUB)		
D854	8-719-301-52	DIODE	SEL2810A-C (STADIUM)		
D855	8-719-301-52	DIODE	SEL2810A-C (DISCO)		
D856	8-719-301-52	DIODE	SEL2810A-C (LIVE ROOM)		
D857	8-719-301-52	DIODE	SEL2810A-C (BGM)		
D858	8-719-301-52	DIODE	SEL2810A-C (DSP FILE)		
		< RESISTOR >			
R850	1-249-425-11	CARBON	4.7K	5% 1/4W	
R851	1-249-434-11	CARBON	27K	5% 1/4W	
R852	1-249-430-11	CARBON	12K	5% 1/4W	
R853	1-247-850-11	CARBON	6.2K	5% 1/4W	
R854	1-247-844-11	CARBON	3.6K	5% 1/4W	
R855	1-247-838-00	CARBON	2K	5% 1/4W	
R856	1-249-416-11	CARBON	820	5% 1/4W	
R857	1-249-434-11	CARBON	27K	5% 1/4W	
R858	1-249-430-11	CARBON	12K	5% 1/4W	

DSP KEY

Ref. No.	Part No.	Description			Remark
R859	1-247-850-11	CARBON	6.2K	5% 1/4W	
R860	1-249-425-11	CARBON	4.7K	5% 1/4W	
R862	1-249-409-11	CARBON	220	5% 1/4W	
R863	1-249-409-11	CARBON	220	5% 1/4W	
R864	1-249-409-11	CARBON	220	5% 1/4W	
R865	1-249-409-11	CARBON	220	5% 1/4W	
R866	1-249-409-11	CARBON	220	5% 1/4W	
R867	1-249-409-11	CARBON	220	5% 1/4W	
R868	1-249-409-11	CARBON	220	5% 1/4W	
R869	1-249-409-11	CARBON	220	5% 1/4W	
		< VARIABLE RESISTOR >			
RV851	1-241-514-11	RES, VAR, CARBON 10K (EQUALIZER)			
RV852	1-241-514-11	RES, VAR, CARBON 10K (REVERB)			
		< SWITCH >			
S851	1-554-303-21	SWITCH, TACTILE (HALL)			
S852	1-554-303-21	SWITCH, TACTILE (CHURCH)			
S853	1-554-303-21	SWITCH, TACTILE (JAZZ CLUB)			
S854	1-554-303-21	SWITCH, TACTILE (STADIUM)			
S855	1-554-303-21	SWITCH, TACTILE (DISCO)			
S856	1-554-303-21	SWITCH, TACTILE (FLAT)			
S857	1-554-303-21	SWITCH, TACTILE (LIVE ROOM)			
S858	1-554-303-21	SWITCH, TACTILE (BGM)			
S859	1-554-303-21	SWITCH, TACTILE (DSP FILE)			

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HEADPHONE JACK

Ref. No.	Part No.	Description			Remark
*	1-639-902-11	HEADPHONE JACK BOARD			
		**********			
		< CAPACITOR >			
C841	1-162-290-31	CERAMIC	470PF	10% 50V	
C842	1-162-290-31	CERAMIC	470PF	10% 50V	
C843	1-164-159-11	CERAMIC	0.1uF	50V	
		< CONNECTOR >			
CN843 *	1-564-518-11	PLUG, CONNECTOR 3P			
		< JACK >			
J841	1-568-519-41	JACK, LARGE TYPE (C77ES/C87ES)			
		< SWITCH >			
S841	1-568-519-21	JACK, LARGE TYPE (HEADPHONES) (C715)			

INDICATION

Ref. No.	Part No.	Description			Remark
*	A-4617-867-A	INDICATION BOARD, COMPLETE (C77ES/C87ES)			
*	A-4617-914-A	INDICATION BOARD, COMPLETE (C715)			
		**********			
	4-937-949-01	HOLDER, LED			
*	4-945-419-01	HOLDER (FL)			
		< CAPACITOR >			
C801	1-124-584-00	ELECT	100uF	20% 10V	
C802	1-164-159-11	CERAMIC	0.1uF	50V	
C803	1-164-159-11	CERAMIC	0.1uF	50V	
		< CONNECTOR >			
CN801	1-568-860-11	SOCKET, CONNECTOR 17P (C715)			
CN801 *	1-568-865-11	SOCKET, CONNECTOR 23P (C77ES/C87ES)			
CN802 *	1-568-857-11	SOCKET, CONNECTOR 14P			
		< DIODE >			
D801	8-719-912-20	DIODE	1SS120		
D802	8-719-912-20	DIODE	1SS120		
D803	8-719-912-20	DIODE	1SS120		
D804	8-719-912-20	DIODE	1SS120		
D805	8-719-912-20	DIODE	1SS120		
D806	8-719-912-20	DIODE	1SS120		
D807	8-719-907-75	DIODE	AA5534S (□□)		
D808	8-719-907-81	DIODE	EBG5534S (▷)		
		< INDICATOR >			
FL801	1-519-650-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC801	8-759-521-08	IC MSC62408-026GS-V1K			
		< TRANSISTOR >			
Q801	8-729-900-80	TRANSISTOR	DTC114ES		
Q802	8-729-900-80	TRANSISTOR	DTC114ES		
Q803	8-729-900-80	TRANSISTOR	DTC114ES		
Q804	8-729-900-80	TRANSISTOR	DTC114ES		
		< RESISTOR >			
R801	1-249-425-11	CARBON	4.7K	5% 1/4W	
R802	1-249-429-11	CARBON	10K	5% 1/4W	
R803	1-247-903-00	CARBON	1M	5% 1/4W	
R804	1-249-441-11	CARBON	100K	5% 1/4W	
R805	1-249-441-11	CARBON	100K	5% 1/4W	
R806	1-249-406-11	CARBON	120	5% 1/4W	
R807	1-249-406-11	CARBON	120	5% 1/4W	
R808	1-249-417-11	CARBON	1K	5% 1/4W	

HEADPHONE JACK INDICATION KEY MAIN RELAY

Ref. No.	Part No.	Description				Remark
R809	1-249-429-11	CARBON	10K	5%	1/4W	
R810	1-249-429-11	CARBON	10K	5%	1/4W	
R811	1-249-429-11	CARBON	10K	5%	1/4W	
R812	1-249-429-11	CARBON	10K	5%	1/4W	
		< SWITCH >				
S801	1-554-303-21	SWITCH, TACTILE (□)				
S802	1-554-303-21	SWITCH, TACTILE (□□)				
S803	1-554-303-21	SWITCH, TACTILE (▷)				
S804	1-554-303-21	SWITCH, TACTILE (⏮)				
S805	1-554-303-21	SWITCH, TACTILE (⏭)				
S806	1-554-303-21	SWITCH, TACTILE (◁◁)				
S807	1-554-303-21	SWITCH, TACTILE (▷▷)				
S808	1-554-303-21	SWITCH, TACTILE (⏏)				
S809	1-554-303-21	SWITCH, TACTILE (DISC SKIP)				
		< CERAMIC >				
X801	1-577-358-21	VIBRATOR, CERAMIC (4MHz)				
**********						
*	1-639-899-11	KEY BOARD				
		*********				
		< SWITCH >				
S860	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)				
S861	1-554-303-21	SWITCH, TACTILE (FADER)				
S862	1-554-303-21	SWITCH, TACTILE (CLEAR)				
S863	1-554-303-21	SWITCH, TACTILE (CHECK)				
S864	1-554-303-21	SWITCH, TACTILE (MUSIC SCAN)				
S865	1-554-303-21	SWITCH, TACTILE (REPEAT)				
S866	1-554-303-21	SWITCH, TACTILE (5)				
S867	1-554-303-21	SWITCH, TACTILE (4)				
S868	1-554-303-21	SWITCH, TACTILE (3)				
S869	1-554-303-21	SWITCH, TACTILE (2)				
S870	1-554-303-21	SWITCH, TACTILE (>10)				
S871	1-554-303-21	SWITCH, TACTILE (1)				
S872	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)				
S873	1-554-303-21	SWITCH, TACTILE (10)				
S874	1-554-303-21	SWITCH, TACTILE (9)				
S875	1-554-303-21	SWITCH, TACTILE (8)				
S876	1-554-303-21	SWITCH, TACTILE (6)				
S877	1-554-303-21	SWITCH, TACTILE (FILE)				
S878	1-554-303-21	SWITCH, TACTILE (LEVEL FILE)				
S879	1-554-303-21	SWITCH, TACTILE (7)				
S880	1-554-303-21	SWITCH, TACTILE (ERASE)				

Ref. No.	Part No.	Description				Remark
*	A-4617-873-A	MAIN BOARD, COMPLETE (C87ES)				
*	A-4617-875-A	MAIN BOARD, COMPLETE (C77ES:US, Canadian, AEP, AUS)				
*	A-4617-876-A	MAIN BOARD, COMPLETE (C77ES:E)				
*	A-4617-878-A	MAIN BOARD, COMPLETE (C715)				
		**********				
*	1-639-896-11	RELAY BOARD				
		**********				
*	4-363-146-00	HEAT SINK, V.OUT				
	4-870-539-00	PLATE, GROUND				
	7-682-547-09	SCREW +BVTT 3X6 (S)				
		< CAPACITOR >				
C201	1-124-572-11	ELECT	100uF	20%	63V	
C202	1-124-122-11	ELECT	100uF	20%	50V	
C203	1-126-937-11	ELECT	4700uF	20%	16V	
C204	1-126-017-11	ELECT	6800uF	20%	16V	
C205	1-126-163-11	ELECT	4.7uF	20%	50V	
C206	1-126-059-11	ELECT	10uF	20%	50V	
C207	1-126-059-11	ELECT	10uF	20%	50V	
C208	1-124-997-11	ELECT	470uF	20%	10V	(C715)
C208	1-126-103-11	ELECT	470uF	20%	16V	(C77ES/C87ES)
C209	1-124-473-11	ELECT	1000uF	20%	10V	(C715)
C209	1-124-559-51	ELECT	1000uF	20%	10V	(C77ES/C87ES)
C210	1-124-997-11	ELECT	470uF	20%	10V	
C211	1-126-024-11	ELECT	220uF	20%	16V	
C220	1-136-165-00	FILM	0.1uF	5%	50V	
C221	1-164-159-11	CERAMIC	0.1uF		50V	
C300	1-164-159-11	CERAMIC	0.1uF		50V	
C301	1-124-589-11	ELECT	47uF	20%	16V	
C302	1-164-159-11	CERAMIC	0.1uF		50V	
C309	1-126-022-11	ELECT	47uF	20%	16V	
C310	1-164-159-11	CERAMIC	0.1uF		50V	
C311	1-136-161-00	FILM	0.047uF	5%	50V	
C312	1-161-374-11	CERAMIC	0.0015uF	20%	50V	
C313	1-164-159-11	CERAMIC	0.1uF		50V	
C314	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C315	1-126-300-11	ELECT	0.47uF	20%	50V	
C316	1-161-494-00	CERAMIC	0.022uF		25V	
C318	1-126-022-11	ELECT	47uF	20%	16V	
C319	1-164-159-11	CERAMIC	0.1uF		50V	
C320	1-164-159-11	CERAMIC	0.1uF		50V	
C321	1-164-159-11	CERAMIC	0.1uF		50V	
C322	1-164-159-11	CERAMIC	0.1uF		50V	
C323	1-164-159-11	CERAMIC	0.1uF		50V	
C331	1-162-208-31	CERAMIC	24PF	5%	50V	
C332	1-164-159-11	CERAMIC	0.1uF		50V	
C335	1-162-205-31	CERAMIC	18PF	5%	50V	

KEY MAIN RELAY

Ref. No.	Part No.	Description			Remark
C337	1-136-165-00	FILM	0.1uF	5%	50V
C340	1-126-163-11	ELECT	4.7uF	20%	50V
C341	1-136-165-00	FILM	0.1uF	5%	50V
C342	1-124-994-11	ELECT	100uF	20%	10V
C343	1-136-165-00	FILM	0.1uF	5%	50V
C345	1-136-165-00	FILM	0.1uF	5%	50V
C346	1-136-165-00	FILM	0.1uF	5%	50V
C349	1-136-165-00	FILM	0.1uF	5%	50V
C350	1-124-994-11	ELECT	100uF	20%	10V
C351	1-136-165-00	FILM	0.1uF	5%	50V
C353	1-162-196-31	CERAMIC	5.6PF	10%	50V
C354	1-162-196-31	CERAMIC	5.6PF	10%	50V
C355	1-136-165-00	FILM	0.1uF	5%	50V
C356	1-124-994-11	ELECT	100uF	20%	10V
C358	1-136-165-00	FILM	0.1uF	5%	50V
C361	1-136-811-11	FILM	330PF 5% 100V (C77ES/C87ES)		
C361	1-162-286-31	CERAMIC	220PF 10% 50V (C715)		
C363	1-136-810-11	FILM	220PF 5% 100V		
C364	1-162-286-31	CERAMIC	220PF 10% 50V (C715)		
C364	1-136-810-11	FILM	220PF 5% 100V (C77ES/C87ES)		
C365	1-136-810-11	FILM	220PF 5% 100V (C77ES/C87ES)		
C365	1-162-286-31	CERAMIC	220PF 10% 50V (C715)		
C366	1-136-810-11	FILM	220PF 5% 100V (C77ES/C87ES)		
C366	1-162-286-31	CERAMIC	220PF 10% 50V (C715)		
C367	1-136-811-11	FILM	330PF 5% 100V (C77ES/C87ES)		
C367	1-162-286-31	CERAMIC	220PF 10% 50V (C715)		
C371	1-106-359-00	MYLAR	4700PF	5%	200V
C372	1-106-359-00	MYLAR	4700PF	5%	200V
C373	1-130-472-00	MYLAR	0.0012uF	5%	50V
C374	1-130-472-00	MYLAR	0.0012uF	5%	50V
C375	1-162-806-11	CERAMIC	0.1uF	10%	50V
C376	1-162-806-11	CERAMIC	0.1uF	10%	50V
C377	1-124-918-11	ELECT	47uF 20% 63V (C77ES/C87ES)		
C377	1-126-051-11	ELECT	47uF 20% 50V (C715)		
C378	1-124-918-11	ELECT	47uF 20% 63V (C77ES/C87ES)		
C378	1-126-051-11	ELECT	47uF 20% 50V (C715)		
C379	1-130-467-00	MYLAR	470PF	5%	50V
C380	1-130-467-00	MYLAR	470PF	5%	50V
C381	1-130-467-00	MYLAR	470PF	5%	50V
C382	1-130-467-00	MYLAR	470PF	5%	50V
C391	1-164-159-11	CERAMIC	0.1uF		50V
C392	1-164-159-11	CERAMIC	0.1uF		50V
C393	1-136-165-00	FILM	0.1uF	5%	50V
C394	1-136-165-00	FILM	0.1uF	5%	50V
C398	1-164-159-11	CERAMIC	0.1uF		50V

Ref. No.	Part No.	Description			Remark
C401	1-126-022-11	ELECT	47uF	20%	16V
C402	1-164-159-11	CERAMIC	0.1uF		50V
C403	1-126-023-11	ELECT	100uF	20%	16V
C404	1-126-023-11	ELECT	100uF	20%	16V
C405	1-162-294-31	CERAMIC	0.001uF	10%	50V
C406	1-162-294-31	CERAMIC	0.001uF	10%	50V
C407	1-162-294-31	CERAMIC	0.001uF	10%	50V
C408	1-164-159-11	CERAMIC	0.1uF		50V
C409	1-164-159-11	CERAMIC	0.1uF		50V
C410	1-164-159-11	CERAMIC	0.1uF		50V
C411	1-125-622-11	CAP, DOUBLE LAYERS 0.10F			
C412	1-164-159-11	CERAMIC	0.1uF		50V
C413	1-161-494-00	CERAMIC	0.022uF		25V
C418	1-164-159-11	CERAMIC	0.1uF		50V
C451	1-164-159-11	CERAMIC	0.1uF		50V
C520	1-161-494-00	CERAMIC	0.022uF		25V
C521	1-126-022-11	ELECT	47uF	20%	16V
C571	1-126-024-11	ELECT	220uF	20%	16V
C572	1-126-024-11	ELECT	220uF	20%	16V
C573	1-126-024-11	ELECT	220uF	20%	16V
C574	1-126-024-11	ELECT	220uF	20%	16V
C601	1-162-306-11	CERAMIC	0.01uF 20% 16V (C77ES)		
C602	1-164-159-11	CERAMIC	0.1uF		50V (C77ES/C87ES)
C603	1-164-159-11	CERAMIC	0.1uF		50V
C900	1-164-159-11	CERAMIC	0.1uF		50V
C901	1-164-159-11	CERAMIC	0.1uF		50V
C903	1-164-159-11	CERAMIC	0.1uF		50V
C905	1-164-159-11	CERAMIC	0.1uF		50V
C906	1-164-159-11	CERAMIC	0.1uF		50V
C908	1-126-022-11	ELECT	47uF	20%	16V
C909	1-164-159-11	CERAMIC	0.1uF		50V
C910	1-126-012-11	ELECT	470uF 20% 16V (C715)		
C910	1-126-026-11	ELECT	470uF 20% 25V (C77ES/C87ES)		
C911	1-126-012-11	ELECT	470uF 20% 16V (C715)		
C911	1-126-026-11	ELECT	470uF 20% 25V (C77ES/C87ES)		
C912	1-162-806-11	CERAMIC	0.1uF	10%	50V
C913	1-162-806-11	CERAMIC	0.1uF	10%	50V
C915	1-164-159-11	CERAMIC	0.1uF		50V
C916	1-164-159-11	CERAMIC	0.1uF		50V
C918	1-164-159-11	CERAMIC	0.1uF		50V
C919	1-164-159-11	CERAMIC	0.1uF		50V
C941	1-107-159-00	MICA	33PF 5% 500V (C77ES/C87ES)		
C941	1-162-211-31	CERAMIC	33PF 5% 50V (C715)		
C942	1-124-918-11	ELECT	47uF 20% 63V (C77ES/C87ES)		
C942	1-126-051-11	ELECT	47uF 20% 50V (C715)		

KEY MAIN RELAY

Ref. No.	Part No.	Description	Remark
C943	1-124-463-00	ELECT 0.1uF 20% 50V	
C944	1-124-463-00	ELECT 0.1uF 20% 50V	
C945	1-124-463-00	ELECT 0.1uF 20% 50V	
C971	1-107-159-00	MICA 33PF 5% 500V	(C77ES/C87ES)
C971	1-162-211-31	CERAMIC 33PF 5% 50V	(C715)
C972	1-124-918-11	ELECT 47uF 20% 63V	(C77ES/C87ES)
C972	1-126-051-11	ELECT 47uF 20% 50V	(C715)
C973	1-124-463-00	ELECT 0.1uF 20% 50V	
C974	1-124-463-00	ELECT 0.1uF 20% 50V	
C975	1-124-463-00	ELECT 0.1uF 20% 50V	
C993	1-161-494-00	CERAMIC 0.022uF 25V	
		< CONNECTOR >	
CN201	* 1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P	
CN301	* 1-573-046-11	SOCKET, CONNECTOR 18P	
CN401	* 1-568-836-11	SOCKET, CONNECTOR 17P	(C715)
CN401	* 1-568-839-11	SOCKET, CONNECTOR 23P	(C77ES/C87ES)
CN403	* 1-568-824-11	SOCKET, CONNECTOR 5P	
CN404	* 1-568-943-11	PIN, CONNECTOR 5P	
CN501	* 1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P	
CN502	* 1-564-506-11	PLUG, CONNECTOR 3P	
CN601	1-566-213-11	PIN, CONNECTOR 4P	(C77ES)
CN602	* 1-564-506-11	PLUG, CONNECTOR 3P	(C87ES)
CN831	* 1-568-937-11	PIN, CONNECTOR 10P	
CN832	* 1-568-937-11	PIN, CONNECTOR 10P	
CN901	* 1-568-946-11	PIN, CONNECTOR 8P	
CN902	* 1-568-944-11	PIN, CONNECTOR 6P	
CN903	* 1-568-955-11	PIN, CONNECTOR 6P	
CN905	* 1-568-955-11	PIN, CONNECTOR 6P	(C87ES)
CN906	* 1-564-509-11	PLUG, CONNECTOR 6P	(C87ES)
		< DIODE >	
D201	8-719-200-82	DIODE 11ES2	
D202	8-719-109-87	DIODE RD5.6ES-B	
D203	8-719-200-82	DIODE 11ES2	
D204	8-719-200-82	DIODE 11ES2	
D205	8-719-200-82	DIODE 11ES2	
D206	8-719-200-82	DIODE 11ES2	
D208	8-719-109-85	DIODE RD5.1ESB2	
D209	8-719-912-20	DIODE 1SS120	
D341	8-719-210-21	DIODE 11EQS04	
D342	8-719-912-20	DIODE 1SS120	
D351	8-719-912-20	DIODE 1SS120	
D352	8-719-912-20	DIODE 1SS120	
D353	8-719-912-20	DIODE 1SS120	
D401	8-719-912-20	DIODE 1SS120	
D571	8-719-912-20	DIODE 1SS120	(C87ES)
D601	8-719-912-20	DIODE 1SS120	(C77ES)
D602	8-719-912-20	DIODE 1SS120	(C77ES)
D603	8-719-109-87	DIODE RD5.6ES-B	(C77ES)
D901	8-719-912-20	DIODE 1SS120	(C87ES)
D902	8-719-912-20	DIODE 1SS120	(C87ES)
		< IC >	
IC201	8-759-605-43	IC M5231TL	
IC202	8-759-630-21	IC M5290P-16	
IC203	8-759-945-58	IC RC4558P	
IC204	8-759-604-86	IC M5F7807L	
IC301	8-752-337-26	IC CXD2500AQ	
IC302	8-752-342-65	IC CXD2560M	
IC303	8-752-344-10	IC CXD2561M-1	
IC306	8-759-982-03	IC RC5532DD	
IC307	8-759-982-03	IC RC5532DD	
IC308	8-759-977-71	IC GP1F31T	(OPTICAL)
IC401	8-759-153-75	IC uPD75516GF-257-3B9	(C87ES)
IC401	8-759-154-22	IC uPD75516GF-264-3B9	(C715/C77ES)
IC402	8-759-512-81	IC LH5160N-10L	
IC403	8-759-821-32	IC CXA-1291P	
IC571	8-759-981-85	IC RC4556D	
IC901	8-752-341-99	IC CXD2701Q	
IC902	8-759-508-41	IC MS51464-10NC	
IC903	8-759-637-20	IC M37470M4-055SP	
IC904	8-759-917-18	IC SN74HCU04AN	
IC910	8-759-982-03	IC RC5532DD	
		< JACK >	
J381	1-568-761-11	JACK, PIN 4P	(LINE OUT) (C715)
J381	1-568-760-11	JACK, PIN 4P	(LINE OUT) (C77ES/C87ES)
		< COIL >	
L201	⚠ 1-421-915-11	TRANSFORMER, LINE FILTER	
L331	1-408-403-00	INDUCTOR 3.3uH	
L342	* 1-410-858-11	INDUCTOR	
L901	1-412-473-21	INDUCTOR 0uH	
L902	1-412-473-21	INDUCTOR 0uH	
L904	1-424-090-11	COIL, LINE FILTER	(C77ES/87ES)
		< LINK >	
PS201	⚠ 1-532-685-00	LINK, IC	(C77:US, Canadian, AEP, Australian)
PS202	1-532-637-00	LINK, IC 1.0A	(C77:US, Canadian, AEP, Australian)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q202	8-729-140-96	TRANSISTOR 2SD774-34	
Q203	8-729-821-73	TRANSISTOR 2SB1274SA-RS	
Q204	8-729-900-61	TRANSISTOR DTA114ES	
Q205	8-729-900-89	TRANSISTOR DTC144ES	
Q206	8-729-900-89	TRANSISTOR DTC144ES	
Q209	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q210	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q341	8-729-900-61	TRANSISTOR DTA114ES (C77ES/C87ES)	
Q341	8-729-900-65	TRANSISTOR DTA144ES (C715)	
Q342	8-729-900-61	TRANSISTOR DTA114ES (C77ES/C87ES)	
Q342	8-729-900-65	TRANSISTOR DTA144ES (C715)	
Q343	8-729-900-65	TRANSISTOR DTA144ES	
Q344	8-729-900-65	TRANSISTOR DTA144ES (C87ES)	
Q345	8-729-900-89	TRANSISTOR DTC144ES (C87ES)	
Q346	8-729-115-28	TRANSISTOR BN1L3Z-K (C87ES)	
Q347	8-729-115-28	TRANSISTOR BN1L3Z-K (C87ES)	
Q371	8-729-107-XX	TRANSISTOR 2SC3622A-K (C87ES)	
Q371	8-729-141-26	TRANSISTOR 2SC3622A-LK (C77ES/C715)	
Q372	8-729-107-XX	TRANSISTOR 2SC3622A-K (C87ES)	
Q372	8-729-141-26	TRANSISTOR 2SC3622A-LK (C77ES/C715)	
Q373	8-729-107-XX	TRANSISTOR 2SC3622A-K (C87ES)	
Q373	8-729-141-26	TRANSISTOR 2SC3622A-LK (C77ES/C715)	
Q374	8-729-107-XX	TRANSISTOR 2SC3622A-K (C87ES)	
Q374	8-729-141-26	TRANSISTOR 2SC3622A-LK (C77ES/C715)	
Q375	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q375	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q376	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q376	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q571	8-729-107-XX	TRANSISTOR 2SC3622A-K (C87ES)	
Q571	8-729-141-26	TRANSISTOR 2SC3622A-LK (C77ES/C715)	
Q572	8-729-107-XX	TRANSISTOR 2SC3622A-K (C87ES)	
Q572	8-729-141-26	TRANSISTOR 2SC3622A-LK (C77ES/C715)	
Q573	8-729-140-97	TRANSISTOR 2SB734-34 (C87ES)	
Q574	8-729-140-96	TRANSISTOR 2SD774-34 (C87ES)	
Q575	8-729-900-85	TRANSISTOR DTC144WS (C87ES)	
Q576	8-729-900-65	TRANSISTOR DTA144ES (C87ES)	
Q577	8-729-900-65	TRANSISTOR DTA144ES (C87ES)	
Q601	8-729-900-89	TRANSISTOR DTC144ES (C77ES/C87ES)	
Q602	8-729-900-61	TRANSISTOR DTA114ES (C77ES/C87ES)	
Q603	8-729-900-61	TRANSISTOR DTA114ES (C77ES/C87ES)	
Q604	8-729-900-61	TRANSISTOR DTA114ES (C77ES/C87ES)	
Q901	8-729-900-63	TRANSISTOR DTA124ES	
Q902	8-729-900-63	TRANSISTOR DTA124ES	
Q903	8-729-900-63	TRANSISTOR DTA124ES	
Q941	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q941	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q942	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q942	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q943	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q943	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q971	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q971	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q972	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q972	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
Q973	8-729-107-84	TRANSISTOR 2SC3623A-L (C87ES)	
Q973	8-729-231-55	TRANSISTOR 2SC2878-AB (C77ES/C715)	
		< RESISTOR >	
R201	1-249-429-11	CARBON 10K 5% 1/4W	
R202	1-249-417-11	CARBON 1K 5% 1/4W	
R204	1-249-425-11	CARBON 4.7K 5% 1/4W	
R205	1-249-425-11	CARBON 4.7K 5% 1/4W	
R208	1-249-423-11	CARBON 3.3K 5% 1/4W	
R209	1-249-414-11	CARBON 560 5% 1/4W	
R210	1-249-429-11	CARBON 10K 5% 1/4W	
R211	1-249-410-11	CARBON 270 5% 1/4W	
R212	1-249-439-11	CARBON 68K 5% 1/4W	
R213	1-249-423-11	CARBON 3.3K 5% 1/4W	
R214	1-249-417-11	CARBON 1K 5% 1/4W	
R220	1-249-429-11	CARBON 10K 5% 1/4W	
R305	1-249-411-11	CARBON 330 5% 1/4W	
R311	1-249-423-11	CARBON 3.3K 5% 1/4W	
R312	1-249-429-11	CARBON 10K 5% 1/4W	
R313	1-249-423-11	CARBON 3.3K 5% 1/4W	
R314	1-249-429-11	CARBON 10K 5% 1/4W	
R318	1-249-441-11	CARBON 100K 5% 1/4W	
R321	1-249-417-11	CARBON 1K 5% 1/4W	
R322	1-249-417-11	CARBON 1K 5% 1/4W	
R323	1-249-417-11	CARBON 1K 5% 1/4W	
R324	1-249-417-11	CARBON 1K 5% 1/4W	
R330	1-249-417-11	CARBON 1K 5% 1/4W	
R331	1-249-417-11	CARBON 1K 5% 1/4W	
R332	1-247-887-00	CARBON 220K 5% 1/4W	
R340	1-249-393-11	CARBON 10 5% 1/4W	
R341	1-249-425-11	CARBON 4.7K 5% 1/4W	
R342	1-249-416-11	CARBON 820 5% 1/4W	

KEY MAIN RELAY

Ref. No.	Part No.	Description				Remark
R343	1-249-428-11	CARBON	8.2K	5%	1/4W	
R344	1-249-428-11	CARBON	8.2K	5%	1/4W	
R345	1-249-436-11	CARBON	39K	5%	1/4W	
R346	1-249-436-11	CARBON	39K	5%	1/4W	
R347	1-249-441-11	CARBON	100K	5%	1/4W	
R348	1-249-429-11	CARBON	10K	5%	1/4W	(C87ES)
R349	1-249-416-11	CARBON	820	5%	1/4W	
R351	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R351	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R352	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R352	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R353	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R353	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R354	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R354	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R355	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R355	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R356	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R356	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R357	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R357	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R358	1-249-428-11	CARBON	8.2K	5%	1/4W	(C715)
R358	1-249-945-11	CARBON	8.2K	1%	1/4W	(C77ES/C87ES)
R359	1-247-903-00	CARBON	1M	5%	1/4W	
R361	1-247-719-11	CARBON	3.3K	5%	1/4W	(C77ES/C87ES)
R361	1-249-423-11	CARBON	3.3K	5%	1/4W	(C715)
R362	1-247-719-11	CARBON	3.3K	5%	1/4W	(C77ES/C87ES)
R362	1-249-423-11	CARBON	3.3K	5%	1/4W	(C715)
R363	1-247-719-11	CARBON	3.3K	5%	1/4W	(C77ES/C87ES)
R363	1-249-423-11	CARBON	3.3K	5%	1/4W	(C715)
R364	1-247-719-11	CARBON	3.3K	5%	1/4W	(C77ES/C87ES)
R364	1-249-423-11	CARBON	3.3K	5%	1/4W	(C715)
R365	1-247-856-00	CARBON	11K	5%	1/4W	(C715)
R365	1-249-948-11	CARBON	11K	1%	1/4W	(C77ES/C87ES)
R366	1-247-856-00	CARBON	11K	5%	1/4W	(C715)
R366	1-249-948-11	CARBON	11K	1%	1/4W	(C77ES/C87ES)
R367	1-247-856-00	CARBON	11K	5%	1/4W	(C715)
R367	1-249-948-11	CARBON	11K	1%	1/4W	(C77ES/C87ES)
R368	1-247-856-00	CARBON	11K	5%	1/4W	(C715)
R368	1-249-948-11	CARBON	11K	1%	1/4W	(C77ES/C87ES)

Ref. No.	Part No.	Description				Remark
R369	1-247-715-11	CARBON	1.5K	5%	1/4W	(C77ES/C87ES)
R369	1-249-419-11	CARBON	1.5K	5%	1/4W	(C715)
R370	1-247-715-11	CARBON	1.5K	5%	1/4W	(C77ES/C87ES)
R370	1-249-419-11	CARBON	1.5K	5%	1/4W	(C715)
R371	1-247-715-11	CARBON	1.5K	5%	1/4W	(C77ES/C87ES)
R371	1-249-419-11	CARBON	1.5K	5%	1/4W	(C715)
R372	1-247-715-11	CARBON	1.5K	5%	1/4W	(C77ES/C87ES)
R372	1-249-419-11	CARBON	1.5K	5%	1/4W	(C715)
R373	1-247-891-00	CARBON	330K	5%	1/4W	
R374	1-247-891-00	CARBON	330K	5%	1/4W	
R375	1-247-704-11	CARBON	220	5%	1/4W	(C77ES/C87ES)
R375	1-249-409-11	CARBON	220	5%	1/4W	(C715)
R376	1-247-704-11	CARBON	220	5%	1/4W	(C77ES/C87ES)
R376	1-249-409-11	CARBON	220	5%	1/4W	(C715)
R377	1-247-704-11	CARBON	220	5%	1/4W	(C77ES/C87ES)
R377	1-249-409-11	CARBON	220	5%	1/4W	(C715)
R378	1-247-704-11	CARBON	220	5%	1/4W	(C77ES/C87ES)
R378	1-249-409-11	CARBON	220	5%	1/4W	(C715)
R379	1-249-425-11	CARBON	4.7K	5%	1/4W	
R380	1-249-425-11	CARBON	4.7K	5%	1/4W	
R381	1-249-425-11	CARBON	4.7K	5%	1/4W	
R382	1-249-425-11	CARBON	4.7K	5%	1/4W	
R383	1-247-708-11	CARBON	470	5%	1/4W	(C77ES/C87ES)
R383	1-249-413-11	CARBON	470	5%	1/4W	(C715)
R384	1-247-708-11	CARBON	470	5%	1/4W	(C77ES/C87ES)
R384	1-249-413-11	CARBON	470	5%	1/4W	(C715)
R385	1-249-393-11	CARBON	10	5%	1/4W	
R386	1-249-393-11	CARBON	10	5%	1/4W	
R387	1-247-891-00	CARBON	330K	5%	1/4W	(C87ES)
R388	1-247-891-00	CARBON	330K	5%	1/4W	(C87ES)
R389	1-247-708-11	CARBON	470	5%	1/4W	(C77ES/C87ES)
R389	1-249-413-11	CARBON	470	5%	1/4W	(C715)
R390	1-247-708-11	CARBON	470	5%	1/4W	(C77ES/C87ES)
R390	1-249-413-11	CARBON	470	5%	1/4W	(C715)
R391	1-247-891-00	CARBON	330K	5%	1/4W	(C87ES)
R392	1-247-891-00	CARBON	330K	5%	1/4W	(C87ES)
R401	1-249-411-11	CARBON	330	5%	1/4W	
R402	1-249-399-11	CARBON	33	5%	1/4W	
R403	1-249-417-11	CARBON	1K	5%	1/4W	
R409	1-247-881-00	CARBON	120K	5%	1/4W	(C77ES/C715)
R409	1-247-882-11	CARBON	130K	5%	1/4W	(C87ES)

KEY MAIN RELAY

Ref. No.	Part No.	Description				Remark
R410	1-247-881-00	CARBON	120K	5%	1/4W	(C77ES/C715)
R410	1-247-882-11	CARBON	130K	5%	1/4W	(C87ES)
R411	1-247-880-11	CARBON	110K	5%	1/4W	(C87ES)
R411	1-249-441-11	CARBON	100K	5%	1/4W	(C77ES/C715)
R412	1-247-878-00	CARBON	91K	5%	1/4W	(C77ES/715S)
R412	1-249-441-11	CARBON	100K	5%	1/4W	(C87ES)
R413	1-247-881-00	CARBON	120K	5%	1/4W	
R414	1-247-881-00	CARBON	120K	5%	1/4W	(C77ES/C715)
R415	1-247-876-11	CARBON	75K	5%	1/4W	(C87ES)
R415	1-249-439-11	CARBON	68K	5%	1/4W	(C77ES/C715)
R416	1-247-876-11	CARBON	75K	5%	1/4W	(C87ES)
R416	1-249-439-11	CARBON	68K	5%	1/4W	(C77ES/C715)
R417	1-247-878-00	CARBON	91K	5%	1/4W	
R418	1-247-878-00	CARBON	91K	5%	1/4W	
R419	1-249-440-11	CARBON	82K	5%	1/4W	
R420	1-249-440-11	CARBON	82K	5%	1/4W	
R421	1-249-393-11	CARBON	10	5%	1/4W	
R422	1-249-393-11	CARBON	10	5%	1/4W	
R423	1-249-393-11	CARBON	10	5%	1/4W	
R450	1-249-429-11	CARBON	10K	5%	1/4W	
R451	1-249-429-11	CARBON	10K	5%	1/4W	
R452	1-249-429-11	CARBON	10K	5%	1/4W	
R453	1-249-429-11	CARBON	10K	5%	1/4W	
R454	1-249-429-11	CARBON	10K	5%	1/4W	
R456	1-249-429-11	CARBON	10K	5%	1/4W	
R457	1-249-429-11	CARBON	10K	5%	1/4W	
R458	1-249-429-11	CARBON	10K	5%	1/4W	
R459	1-249-429-11	CARBON	10K	5%	1/4W	
R460	1-249-429-11	CARBON	10K	5%	1/4W	
R461	1-249-429-11	CARBON	10K	5%	1/4W	
R462	1-249-429-11	CARBON	10K	5%	1/4W	
R463	1-249-429-11	CARBON	10K	5%	1/4W	
R464	1-249-429-11	CARBON	10K	5%	1/4W	
R465	1-249-429-11	CARBON	10K	5%	1/4W	
R571	1-247-739-11	CARBON	100	5%	1/2W	(C87ES)
R571	1-249-405-11	CARBON	100	5%	1/4W	(C77ES/C715)
R572	1-247-739-11	CARBON	100	5%	1/2W	(C87ES)
R572	1-249-405-11	CARBON	100	5%	1/4W	(C77ES/C715)
R573	1-249-434-11	CARBON	27K	5%	1/4W	
R574	1-249-437-11	CARBON	47K	5%	1/4W	
R575	1-247-870-11	CARBON	43K	5%	1/4W	
R576	1-249-402-11	CARBON	56	5%	1/4W	
R577	1-249-421-11	CARBON	2.2K	5%	1/4W	
R578	1-247-881-00	CARBON	120K	5%	1/4W	

Ref. No.	Part No.	Description				Remark
R583	1-249-437-11	CARBON	47K	5%	1/4W	
R584	1-249-434-11	CARBON	27K	5%	1/4W	
R585	1-247-870-11	CARBON	43K	5%	1/4W	
R586	1-249-402-11	CARBON	56	5%	1/4W	
R587	1-249-421-11	CARBON	2.2K	5%	1/4W	
R589	1-247-881-00	CARBON	120K	5%	1/4W	
R591	1-249-429-11	CARBON	10K	5%	1/4W	(C87ES)
R592	1-249-417-11	CARBON	1K	5%	1/4W	(C87ES)
R593	1-249-429-11	CARBON	10K	5%	1/4W	(C87ES)
R594	1-249-417-11	CARBON	1K	5%	1/4W	(C87ES)
R595	1-249-429-11	CARBON	10K	5%	1/4W	
R596	1-249-429-11	CARBON	10K	5%	1/4W	
R601	1-249-429-11	CARBON	10K	5%	1/4W	(C77ES/C87ES)
R602	1-249-429-11	CARBON	10K	5%	1/4W	(C77ES/C87ES)
R603	1-249-393-11	CARBON	10	5%	1/4W	(C77ES)
R901	1-249-417-11	CARBON	1K	5%	1/4W	
R902	1-249-417-11	CARBON	1K	5%	1/4W	
R903	1-249-417-11	CARBON	1K	5%	1/4W	
R905	1-249-417-11	CARBON	1K	5%	1/4W	
R906	1-249-417-11	CARBON	1K	5%	1/4W	
R907	1-249-417-11	CARBON	1K	5%	1/4W	
R910	1-249-429-11	CARBON	10K	5%	1/4W	
R911	1-249-417-11	CARBON	1K	5%	1/4W	
R912	1-249-417-11	CARBON	1K	5%	1/4W	
R913	1-249-417-11	CARBON	1K	5%	1/4W	
R915	1-249-441-11	CARBON	100K	5%	1/4W	
R916	1-249-441-11	CARBON	100K	5%	1/4W	
R917	1-249-441-11	CARBON	100K	5%	1/4W	
R918	1-247-700-11	CARBON	100	5%	1/4W	(C77ES)
R918	1-247-739-11	CARBON	100	5%	1/2W	(C87ES)
R918	1-249-405-11	CARBON	100	5%	1/4W	(C715)
R919	1-247-700-11	CARBON	100	5%	1/4W	(C77ES)
R919	1-247-739-11	CARBON	100	5%	1/2W	(C87ES)
R919	1-249-405-11	CARBON	100	5%	1/4W	(C715)
R924	1-249-417-11	CARBON	1K	5%	1/4W	
R925	1-249-417-11	CARBON	1K	5%	1/4W	
R941	1-249-419-11	CARBON	1.5K	5%	1/4W	(C715)
R941	1-249-556-11	CARBON	1.5K	5%	1/4W	(C77ES/C87ES)
R943	1-249-441-11	CARBON	100K	5%	1/4W	(C715)
R943	1-249-469-11	CARBON	100K	5%	1/4W	(C77ES/C87ES)
R945	1-249-425-11	CARBON	4.7K	5%	1/4W	
R946	1-249-425-11	CARBON	4.7K	5%	1/4W	
R947	1-249-425-11	CARBON	4.7K	5%	1/4W	
R948	1-247-717-11	CARBON	2.2K	5%	1/4W	(C77ES/C87ES)
R948	1-249-421-11	CARBON	2.2K	5%	1/4W	(C715)

KEY MAIN RELAY POWER SW TABLE MOTOR LOADING MOTOR OPEN／UP SW

Ref. No.	Part No.	Description				Remark
R949	1-247-718-11	CARBON	2.7K	5%	1/4W	(C77ES/C87ES)
R949	1-249-422-11	CARBON	2.7K	5%	1/4W	(C715)
R950	1-247-836-11	CARBON	1.6K	5%	1/4W	(C715)
R950	1-249-928-11	CARBON	1.6K	5%	1/4W	(C77ES/C87ES)
R951	1-247-128-00	CARBON	750	5%	1/4W	(C77ES/C87ES)
R951	1-247-828-11	CARBON	750	5%	1/4W	(C715)
R952	1-247-832-11	CARBON	1.1K	5%	1/4W	(C715)
R952	1-249-553-11	CARBON	1.1K	5%	1/4W	(C77ES/C87ES)
R953	1-249-410-11	CARBON	270	5%	1/4W	(C715)
R953	1-249-538-11	CARBON	270	5%	1/4W	(C77ES/C87ES)
R971	1-249-419-11	CARBON	1.5K	5%	1/4W	(C715)
R971	1-249-556-11	CARBON	1.5K	5%	1/4W	(C77ES/C87ES)
R973	1-249-441-11	CARBON	100K	5%	1/4W	(C715)
R973	1-249-469-11	CARBON	100K	5%	1/4W	(C77ES/C87ES)
R975	1-249-425-11	CARBON	4.7K	5%	1/4W	
R976	1-249-425-11	CARBON	4.7K	5%	1/4W	
R977	1-249-425-11	CARBON	4.7K	5%	1/4W	
R978	1-247-717-11	CARBON	2.2K	5%	1/4W	(C77ES/C87ES)
R978	1-249-421-11	CARBON	2.2K	5%	1/4W	(C715)
R979	1-247-718-11	CARBON	2.7K	5%	1/4W	(C77ES/C87ES)
R979	1-249-422-11	CARBON	2.7K	5%	1/4W	(C715)
R980	1-247-836-11	CARBON	1.6K	5%	1/4W	(C715)
R980	1-249-928-11	CARBON	1.6K	5%	1/4W	(C77ES/C87ES)
R981	1-247-128-00	CARBON	750	5%	1/4W	(C77ES/C87ES)
R981	1-247-828-11	CARBON	750	5%	1/4W	(C715)
R982	1-247-832-11	CARBON	1.1K	5%	1/4W	(C715)
R982	1-249-553-11	CARBON	1.1K	5%	1/4W	(C77ES/C87ES)
R983	1-249-410-11	CARBON	270	5%	1/4W	(C715)
R983	1-249-538-11	CARBON	270	5%	1/4W	(C77ES/C87ES)
		< RELAY >				
RY901	1-515-787-11	RELAY (C87ES)				
RY902	1-515-787-11	RELAY (C87ES)				
		< SWITCH >				
SW201	1-571-722-11	SWITCH, VOLTAGE SELECTION (C77ES:E)				
		< CRYSTAL >				
X351	1-567-965-11	VIBRATOR, CRYSTAL (22.5792MHz)				
X401	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)				
X901	1-577-099-11	VIBRATOR, CERAMIC (3.58MHz)				

Ref. No.	Part No.	Description				Remark
*	1-639-900-11	POWER SW BOARD				
		**********				
		< CAPACITOR >				
C811	1-164-159-11	CERAMIC	0.1uF		50V	
		< CONNECTOR >				
CN811 *	1-573-102-11	SOCKET, CONNECTOR 14P				
		< IC >				
IC811	8-741-100-48	IC SBX1610-59				
		< SWITCH >				
S811	1-554-303-21	SWITCH, TACTILE (DISC 1)				
S812	1-554-303-21	SWITCH, TACTILE (DISC 2)				
S813	1-554-303-21	SWITCH, TACTILE (DISC 3)				
S814	1-554-303-21	SWITCH, TACTILE (DISC 4)				
S815	1-554-303-21	SWITCH, TACTILE (DISC 5)				
S816	1-554-303-21	SWITCH, TACTILE (TINE/MEMO)				
S817	1-554-303-21	SWITCH, TACTILE (BANK)				
S818	1-554-303-21	SWITCH, TACTILE (PROGRAM)				
S819	1-554-303-21	SWITCH, TACTILE (SHUFFLE)				
S820	1-554-303-21	SWITCH, TACTILE (CONTINUE)				
S821	1-572-714-11	SWITCH, PUSH (POWER)				
S822	1-570-157-51	SWITCH, SLIDE (TIMER)				
**********						
*	1-638-729-11	TABLE MOTOR BOARD				
		**********				
*	1-638-730-11	LOADING MOTOR BOARD				
		**********				
*	1-638-731-11	OPEN/UP SW BOARD				
		**********				
		< CAPACITOR >				
C704	1-161-375-00	CERAMIC	0.0022uF	20%	50V	
C705	1-161-375-00	CERAMIC	0.0022uF	20%	50V	
		< CONNECTOR >				
CN705 *	1-566-214-11	PIN, CONNECTOR (PC BOARD) 2P				
CN707 *	1-573-044-11	SOCKET, CONNECTOR				
		< DIODE >				
D701	8-719-970-19	DIODE GP1A521				
		< RESISTOR >				
R701	1-249-416-11	CARBON	820	5%	1/4W	

TABLE MOTOR | LOADING MOTOR | OPEN／UP SW | VR

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S702	1-571-300-21	SWITCH, ROTARY (UP/OPEN)	
**********			
*	1-639-901-11	VR BOARD	
		********	
		< VARIABLE RESISTOR >	
RV840	1-241-513-11	RES, VAR (PHONE/LINE OUT LEVEL)	
**********			
		MISCELLANEOUS	
		*************	
10	1-590-868-11	WIRE, FLAT TYPE	
61 ⚠	1-559-583-21	CORD, POWER (C87ES)	
111 ⚠	1-558-181-21	CORD, POWER (E)	
111 ⚠	1-558-568-21	CORD, POWER (AEP)	
111 ⚠	1-559-583-21	CORD, POWER (C77ES:US, Canadian)	
111 ⚠	1-575-379-21	CORD, POWER (AUS)	
111 ⚠	1-590-836-11	CORD, POWER (C715:US, Canadian)	
112 ⚠	1-569-007-11	ADAPTER, CONVERSION 2P (E)	
157	1-452-340-21	MAGNET	
163	1-590-849-11	WIRE, FLAT TYPE (5 CORE)	
220	1-590-867-11	WIRE, FLAT TYPE (C77ES/C87ES)	
220	1-590-928-11	WIRE, FLAT TYPE (17 CORE) (C715)	
221	1-535-892-11	JUMPER, FILM (WITH TERMINAL)	
253 ⚠	8-848-144-11	DEVICE, OPTICAL KSS-240A	
254	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
D701	8-719-970-19	DIODE GP1A521	
M1	X-4917-523-3	BASE (OUTSERT) ASSY	
M2	X-4917-504-1	MOTOR ASSY	
M701	A-4604-585-A	MOTOR ASSY, ROTARY	
M702	A-4604-871-A	MOTOR ASSY, LOADING	
S701	1-572-713-11	SWITCH, PUSH (WITH CONNECTOR)	
T991 ⚠	1-450-542-11	TRANSFORMER, POWER (US, Canadian)	
T991 ⚠	1-450-543-11	TRANSFORMER, POWER (AEP, AUS)	
T991 ⚠	1-450-544-11	TRANSFORMER, POWER (E)	

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		********************************	
	1-465-727-11	REMOTE COMMANDER (C87ES)	
	1-465-728-11	REMOTE COMMANDER (C715/C77ES)	
	1-558-233-11	CORD (WITH CONNECTOR) (SIRCS) 4P (C87ES)	
	1-558-271-11	CORD, CONNECTION	
	1-559-533-11	CORD, CONNECTION (C715)	
	3-701-630-00	BAG, POLYETHYLENE (C77ES:AEP, Canadian)	
	3-704-366-01	SCREW (CASE) (M3X8) (C77ES/C87ES)	
	3-707-584-01	COVER, BATTERY	
	3-753-438-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE) (C77ES:Canadian, AEP, E)	
	3-753-438-22	MANUAL, INSTRUCTION (ENGLISH) (C77ES:US, Australian/C87ES)	
	3-753-438-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN) (C77ES:AEP)	
	3-753-439-22	MANUAL, INSTRUCTION (ENGLISH) (C715)	
	3-753-439-31	MANUAL, INSTRUCTION (FRENCH) (C87ES/C715:Canadian)	
*	4-930-586-01	CUSHION (FRONT) (C715:US/C77ES:US, AEP, E, Australian)	
*	4-930-587-01	CUSHION (REAR) (C715:US/C77ES:US, AEP, E, Australian)	
*	4-934-320-01	CUSHION (FRONT) (C87ES)	
*	4-934-321-01	CUSHION (REAR) (C87ES)	
	4-937-945-01	PLATE (TRANSPORT), LOCK (C77ES:US, AEP, E, AUS/C87ES/C715)	
*	4-941-548-01	LABEL, CLASS 1 (C77ES:AEP, E, AUS)	
*	4-944-836-01	INDIVIDUAL CARTON (C715:US)	
*	4-944-837-01	INDIVIDUAL CARTON (C87ES)	
*	4-944-837-11	INDIVIDUAL CARTON (C77ES:US, AEP, E, AUS)	
	4-945-758-01	CARD, CUSTOMER INQUIRY (C715:US)	
	4-946-303-01	SEAL, DSP (C715/C77ES:E, Australian)	
	4-946-514-01	LABEL, CAUTION (C87ES)	
	J-609-001-3A	CORD (WITH CONNECTOR) (C87ES)	
**********			

HARDWARE LIST

****

# 1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
# 2	7-682-247-09	SCREW +K 3X6
# 3	7-685-870-01	SCREW +BVTT 3X5 (S)
# 4	7-682-547-09	SCREW +BV 3X6, S TIGHT
# 5	7-685-136-19	SCREW +P 2.6X12 TYPE2 NON-SLIT
# 6	7-682-554-04	SCREW +B 3X25
# 7	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S
# 8	7-621-255-15	SCREW +P 2X3
# 9	7-685-648-79	SCREW (M3X12), TAPPING
#10	7-683-401-04	BOLT, HEXAGON SOCKET 3X4 (C77ES/C87ES)
#11	7-685-666-79	SCREW +BVTP 4X30 TYPE2 N-S (C87ES)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

9-956-587-11

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Audio Group

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